
People & Jobs in the Lower Mainland

*A Long-run Projection of Population
& Employment as Background for
Strategic Transportation Planning
in the Lower Mainland Region*

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Introduction

The municipalities comprising British Columbia's Lower Mainland are inexorably connected through an array of common physical and social infrastructure. As such, any discussion that is concerned with the future of regional transportation and transit must be framed within the context of the ever-changing—and expanding—web of people, labour force, and jobs within the Lower Mainland region.

To give context to discussions around the future of regional transportation infrastructure, this report briefly examines historical and projected changes in the population, labour force, and employment within what might be called the functional Lower Mainland region, which includes the Fraser Valley (FVRD), Greater Vancouver (GVRD, Metro Vancouver), and Squamish-Lillooet (SLRD) Regional Districts.

From an empirical perspective, the most recent National Household Survey (NHS) data illustrate the extent of the functional region; the NHS data show that in 2011 there were 21,135 residents of the Fraser Valley who had a usual place of work in Greater Vancouver. Most of these residents—20,930 of them—commuted into Greater Vancouver from Abbotsford, Mission, and Chilliwack. Similarly, there were some 9,300 Greater Vancouver residents who had a usual place of work somewhere within the Fraser Valley, making the commuting flows of workers within and between these Regional Districts a key feature of the Lower Mainland's economy.

Increased transportation capacity along the Sea-to-Sky Corridor and growth in the vicinity of Squamish, including in Porteau Cove, Britannia Beach, and Furry Creek, has seen these communities play a greater role within the Lower Mainland's economy and housing markets; almost 300 Greater Vancouver residents have a usual place of work in the Squamish region, with more than 1,400 SLRD residents working in Greater Vancouver. The Squamish-centered communities of the SLRD have played, and will continue to play, a growing role in the regional economy.

This report has been divided into two major sections. Section I explores past trends in demographic and economic change in the Lower Mainland, including the role that both natural increase (births and deaths) and migration have played in altering the size and composition of the region's population. Historical changes in the region's economic environment are considered through the extent to which employment in the region has grown and, more importantly, changed in terms of its industry composition. Section II presents long-range outlooks for demographic and economic change in the Lower Mainland region.

I Historical Demographic & Economic Profile: 1976-2012

Demography

Historical estimates of the Lower Mainland’s population show that the region grew from 1.3 million people in 1976 to 1.5 million in 1982, passed the two million mark by 1994, to reach 2.8 million by 2012 (Figure 1). As such, the region’s population has more than doubled since 1976 (107 percent growth), having added 1.4 million more residents.

Figure 1

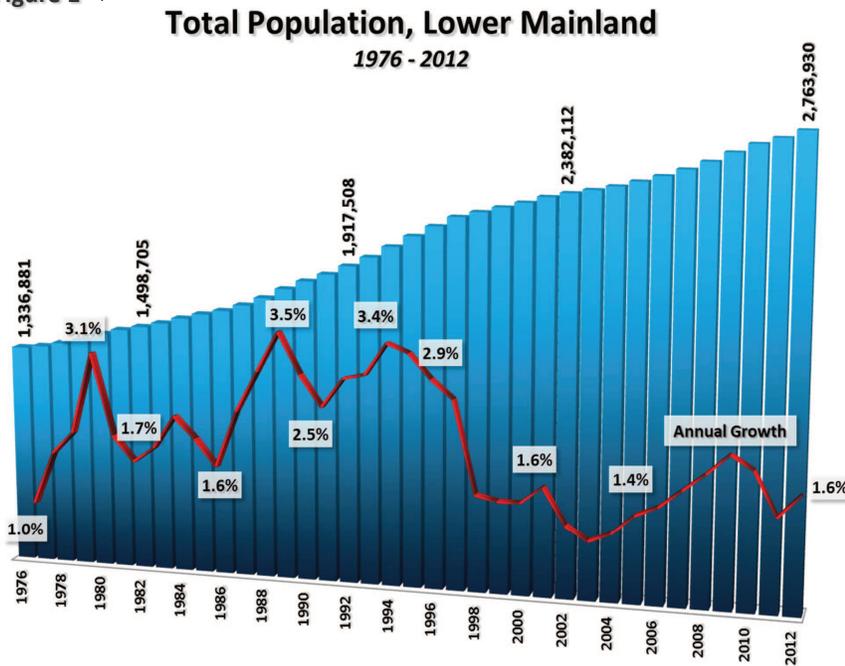
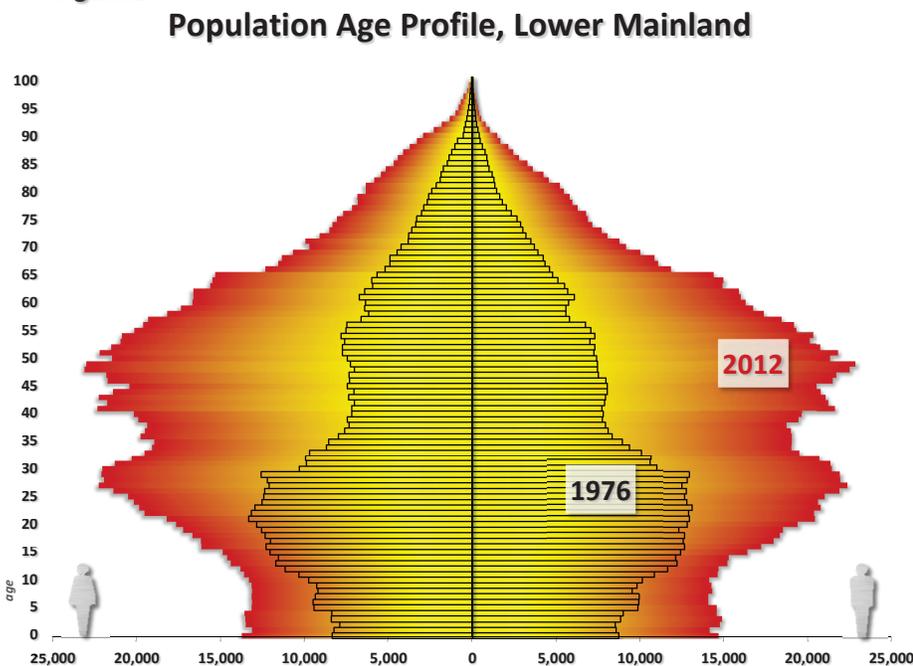


Figure 2



While annual growth averaged two percent over this period, the pace of growth has shown a great deal of variance, ranging from highs of over three percent in the early-1990s to lows of under one percent that characterized the early-2000s.

Within this general pattern of growth, a cyclical pattern of change that is closely tied to BC’s relative economic circumstances is evident. For example, in both the early-1980s and 1990s, when population growth was in the range of three percent per year, the provincial economy was expanding significantly. Specifically, in the two years leading up to the ten percent growth in real gross domestic product (GDP) recorded in 1981, the provincial economy expanded by 3.5 percent and 6.9 percent respectively.

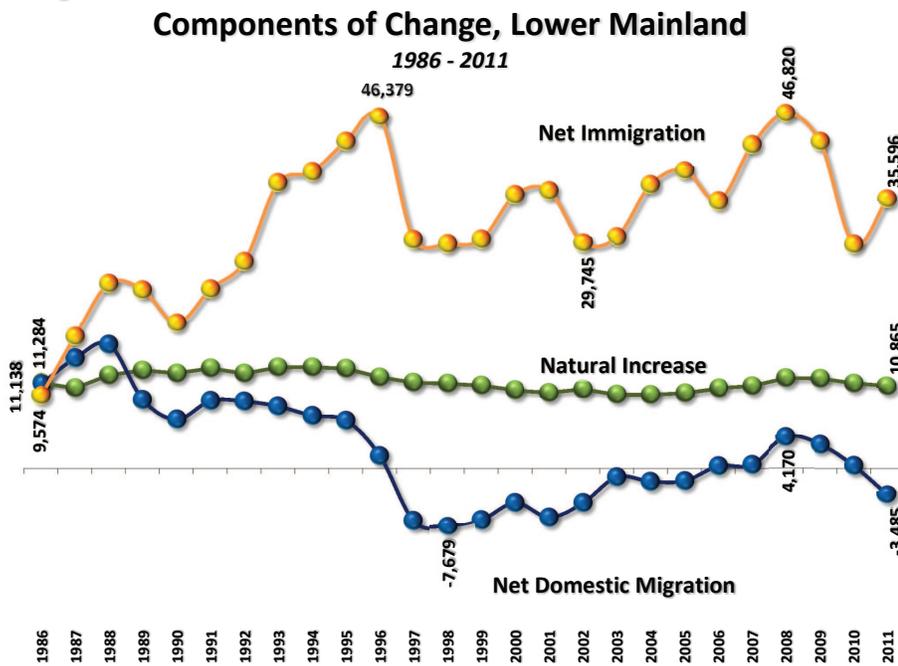
Although BC experienced a second wave of rapid economic growth in 1993 (4.5 percent growth in GDP), the number of people added to the region each year has never returned to levels seen in 1989 and 1997 when between 56,500 and 66,600 people were added each year. Over the past four years (2008 to 2012) annual increments of population growth have fallen into the range of 37,000 to 54,000 people per year, well below the levels seen during the 1989 to 1997 period.

Accompanying the growth of the region’s population has been a significant change in its composition (Figure 2). Over the past 36 years the region’s profile has been dominated by the aging of the large population cohort of the post-War baby

boom. In 1976, 38 percent of the Lower Mainland’s population was between the ages of eleven and 30 (born between 1946 and 1965). Thirty six years later, with the boomers having long aged out of this group, only 27 percent of the region’s population was aged eleven to 30 (in 2012). Currently, the region’s boomers (aged 47 to 66), along with their international and domestic migrant counterparts, account for 27 percent of the Lower Mainland’s population.

In addition to the region’s age profile shifting upwards, it has also expanded outwards; *net immigration* (immigrants, emigrants and change in non-permanent residents) has been the major source of population growth in the Lower Mainland since 1986, adding an average of 32,469 people to the region each year (Figure 3). The lowest level of net immigration over the past 25 years was recorded in 1986, at 9,574 people; in contrast, 2008 saw the largest contribution from net immigration, with 46,820 people immigrating to the region (on a net basis). Although dip in net immigration was seen in 2009 and 2010, due in large part to the global recession of 2008, the level of net immigration recovered in 2011 to 35,596 people.

Figure 3



In contrast, *net domestic migration* (people moving between the Lower Mainland and the rest of BC and other provinces) has added a little over 2,200 people annually to the region since 1986 (Figure 3). Having peaked in 1988 at 16,371, contributions to population growth from domestic sources have been relatively low since. In fact, between 1997 and 2005, people leaving the Lower Mainland for other parts of BC and other provinces outnumbered those who moved to the Lower Mainland from other parts of the province and country; over this period, net domestic migration averaged a *net loss* of 4,500 residents each year. As was the case with net immigration, a recent influx of net domestic migrants was seen in 2008, when upwards of 4,000 people came to the Lower Mainland from other parts of BC and Canada. Since 2008

however, the net flow of domestic migrants decreased steadily, again becoming negative in 2011 with a net loss of 3,485 people.

Changes in the patterns of fertility and mortality have meant that annual population gains associated with the process of *natural increase* (births minus deaths) have been a relatively small, yet constant, source of regional population growth. Between 1986 and 2011 natural increase added an average of 11,543 people to the Lower Mainland each year (Figure 3); that said, there has been a gradual decline in the contribution of natural increase over time (from highs of 13,368 in 1994 to 10,865 people by 2011), the consequence of a growing share of the region’s population aging out of the high fertility and into higher mortality stages of the lifecycle and the number of deaths increasing more rapidly than the number of births.

Through the inevitable process of aging, the regional age profile will continue its historical pattern of upward change as the baby boom bulge shifts into the older age groups characterized by higher social service utilization and lower labour force participation. Contrasting significant relative and absolute growth expected in the older age groups will be the far slower growth projected for the younger age cohorts. While expected to grow more slowly, however, changes in the younger cohorts will remain significant,

with growth for these cohorts becoming increasingly dependent upon migration, both from international and domestic origins.

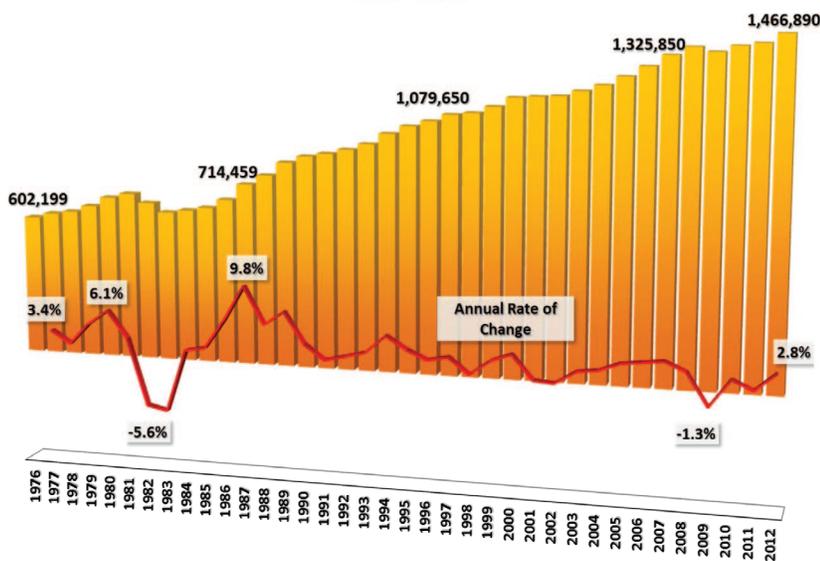
Future demographic change in the Lower Mainland will therefore not only see the region get older—and thus see travel patterns change—it will also bring with it dramatic changes in the ethnic and cultural diversity of young families. Understanding how the region’s changing demography will influence regional housing demand and land use change will provide insights into where current and future residents will situate within the region, the types of housing they could demand, and the magnitude and nature of the pressures they could put on regional transportation infrastructure. Hence, understanding the drivers to future demographic change is of fundamental importance to the region’s transportation and transit infrastructure if it is to effectively accommodate a larger, older, more diverse population.

Economy & Employment

Along with changing demographics, of fundamental importance to discussions of regional transportation infrastructure are the changing magnitude, nature, and locations of work throughout the Lower Mainland. Over the past 36 years, **employment** in the Lower Mainland has grown by 136 percent, faster than the 107 percent growth seen in the regional population. Since 1976, the number of jobs in the region has increased

Figure 4

**Total Employment, Lower Mainland
1976 - 2012**



from 602,199 to almost 1.5 million (Figure 4). This amounts to an additional 864,691 places of work over this period, an average of more than 24,000 each year.

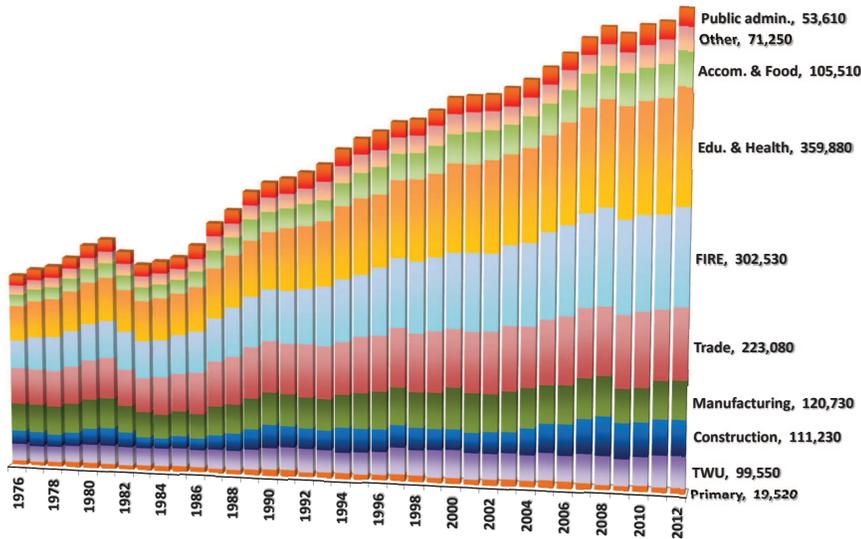
As with the pace of annual population growth, the pace of growth has been far from continuous. On the heels of slow economic growth in the mid-1980s (kicked off by a 6.1 percent contraction of the provincial economy in 1982), regional employment grew by an impressive seven percent the next year, as the region added 58,200 jobs between 1988 and 1989.

In contrast, the early-2000s saw regional employment grow only marginally, coinciding with provincial declines in employment in 2001 and a provincial economy that grew by only 0.6 percent. More recently, the global recession of 2009 resulted in a 1.3 percent decline in regional employment in that year, as employment levels BC-wide declined by 2.1 percent, provincial real GDP fell by 2.5 percent, and BC’s unemployment rate increased from 4.3 to 7.2 percent.

Since falling to 1.38 million jobs in 2009, employment in the region has increased beyond its 2008 peak, posting annual growth rates of 1.9 percent in 2010, 0.8 in 2011, and 2.8 percent in 2012. The Lower Mainland has gained back all of the jobs lost (18,950) during the 2009 recession—and then some—with the 40,640 jobs added in 2012 alone being well-above the job losses suffered in 2008.

Considering the changing composition of employment in the region, **Trade** (retail and wholesale) was the largest employment sector in 1976, accounting for just under one-fifth (19 percent) of all jobs in that year (113,284 jobs). **Education, Health & Information** (including Cultural Services) was the second-largest sector, making up 18 percent of the region’s jobs (108,591), with **Finance, Insurance & Real**

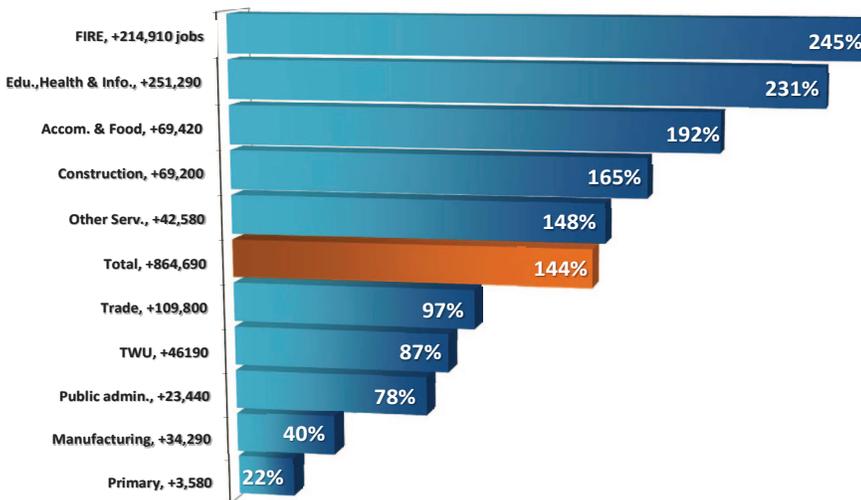
Figure 5
Employment by Industry, Lower Mainland
1976 - 2012



grown to 83 percent, with the goods-producing sectors declining to 17 percent of regional jobs and the top three sectors now representing 60 percent of all work within the region.

By 2012, **Education, Health & Information** had become the largest employment sector, accounting for one-quarter of all jobs in the region (359,880). Over the past 36 years this sector has grown by 231 percent, adding 192,050 jobs—the most of any industry sector (Figure 6).

Figure 6
Change in Employment by Industry, Lower Mainland
1976 - 2012



also seen in **Accommodation & Food** (192 percent), **Construction** (165 percent), and **Other Services** (148 percent). The share of total employment for each of these sectors has changed little since 1976, with each sector accounting for between five and eight percent of the region's employment.

The slowest growth over this period was seen in **Primary** sector activities, which has grown by only 3,580 jobs since 1976 (19 percent growth). As a result, this sector has gone from representing 2.6 percent of

Estate (FIRE) coming in third, accounting for 15 percent of employment (87,621 jobs) in 1976. Three and a half decades ago these top three sectors accounted for just over half of the Lower Mainland's jobs (51 percent). Further to this, if other service-providing jobs are considered, the broad service sector represented more than three-quarters (76 percent) of regional employment in 1976, with the goods producing sectors representing the remaining 24 percent (Figure 5).

Over the following three and a half decades the composition of the region's employment shifted even more towards service-based activities and become more concentrated in the top three sectors. By 2012, jobs in service-providing sectors had

Despite the impressive growth experienced in this sector, jobs in the **Finance, Insurance and Real Estate (FIRE)**, sector expanded more rapidly, by 245 percent, and added the second-largest number of jobs (214,910). FIRE became the region's second-most important employment sector, having seen its share of the region's employment grow from 15 percent in 1976 to 21 percent in 2012. Finally, the **Trade** sector fell to third place, as it grew by 97 percent and added almost 110,000 jobs. Collectively these three sectors represented 60 percent of regional jobs, a 17 percent greater share than in 1976.

Relative to the 144 percent growth in total employment, above-average growth was

the region’s jobs in 1976 to a mere 1.3 percent by 2012. The slow growth rate seen in **Manufacturing** (31 percent) has also meant that this sector’s share of total regional employment has declined noticeably, falling from 14 percent in 1976 to only eight percent today.

Along with changes in the structure of the region’s economy and its jobs base, the **places of work** to which the region’s labour force has been commuting have also changed significantly. The 1971 Census reported that more than one in five workers (22 percent) in the Vancouver Census Metropolitan Area (CMA)¹ commuted to a usual place of work in the City of Vancouver, while only 6.4 percent of workers in the City of Vancouver commuted out of the City to one of the surrounding municipalities for work (Figure 7). Further to this, in 1971 36.7 percent of those living in the City Vancouver also worked in within the City. The following three decades saw the City of Vancouver’s prominence as centre for jobs (for both Vancouverites

and those in the rest of the region) decline; by 2001, the share of people commuting into the City of Vancouver had fallen by almost 25 percent (to 16.7 percent), with the share of those commuting within the City of Vancouver declining by almost 50 percent (to 19.3 percent).

These declines were offset by increases in the share of the region’s residents commuting between non-Vancouver municipalities. By 1996, commuting between non-Vancouver municipalities had grown to represent more than half of all commuting trips and by 2001 this increased further, to 54.7 percent. Over this three-decade period, the region saw inter-municipal (outside the City of Vancouver) commuting increase by 57

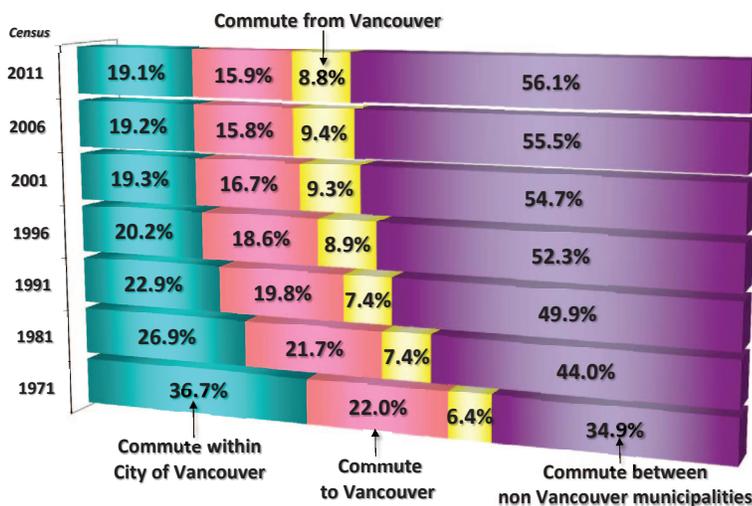
percent, going from representing only 34.9 percent of trips to 54.7 percent. In addition to inter-municipal commuting increasing as a share, the proportion of people commuting *from* the City of Vancouver also increased, representing almost ten percent of trips by 2001.

While the pattern of a growing share of work trips occurring between non-Vancouver municipalities continued through the more recent Census periods, the changes have been slower since 2001. By 2011 the National Household Survey reported that the share of commuters traveling to the City of Vancouver had declined to 15.9 percent and those commuting within Vancouver had fallen to 19.1 percent. The share of commuters traveling between non-Vancouver municipalities had, however, increased further, to 56.1 percent of commuting trips

While changes in the places of work, commuting patterns, and the structure of the regional economy have each had specific influences on transportation investments made within the region over the past four decades, work-related commuting trips are estimated to represent under one third of daily trips within the region. As such, in looking forward to the coming decades, it is important to move back to consideration of changes in size and composition of the region’s residents before considering an outlook for the region’s economy and jobs.

Figure 7

**Percent of Resident Workers by Place of Work, Vancouver CMA
1971 - 2011**



¹ Note that the Vancouver CMA is Statistics Canada’s equivalent to the Greater Vancouver Regional District.

II Demographic & Economic Outlook: 2012-2046

Demography

Changes to the region's migration flows and levels of natural increase will determine the relative influence that each of these drivers to growth will have on the region's population in the coming years; at the same time, the region's existing 2.8 million residents will largely dictate the extent of compositional changes through the inevitable process of aging. As such, before delving into the number of people expected in the region by 2046, it is important to consider the assumptions and drivers underlying the projections.

Net international migration is expected to grow from an estimated 33,799 people in 2012 cross 40,000 by 2020 and peak at 42,750 in 2026. Beyond 2026 net immigration is expected to fall in to the range of 41,000 net immigrants per year to 2046(Figure 8). The basis for the Lower Mainland achieving this level of net immigration is a projection of Canada achieving an annual immigration rate of 0.8 percent (up from 0.74 percent currently) by 2021. This would see the total number of immigrants coming to Canada each year increase from 260,000 today to 310,000 by 2021 and further into the range of 330,000 by 2040.

Figure 8

Components of Population Change, Lower Mainland

1986 - 2011; Projected to 2046

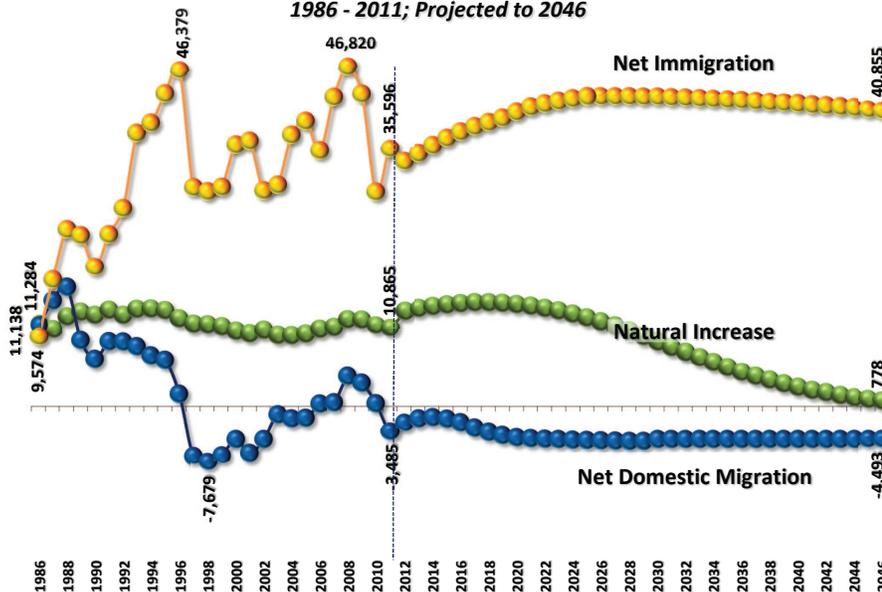
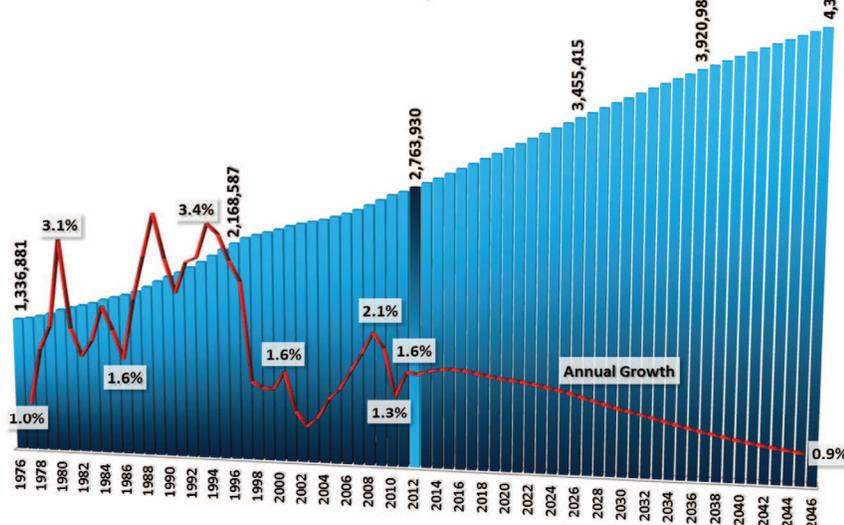


Figure 9

Total Population, Lower Mainland

1976 - 2012; Projected to 2046



In the short-term, **net domestic migration** to the Lower Mainland is expected to move back towards levels seen in the mid-2000s, as the region's net loss is reduced from its current 3,500 to 1,513 by 2014. From 2015 onwards the net loss of domestic migrants to other parts of BC and other provinces is expected to increase, reaching 4,449 in 2022, before the region's annual losses stabilize in the range of 4,500 domestic migrants each year.

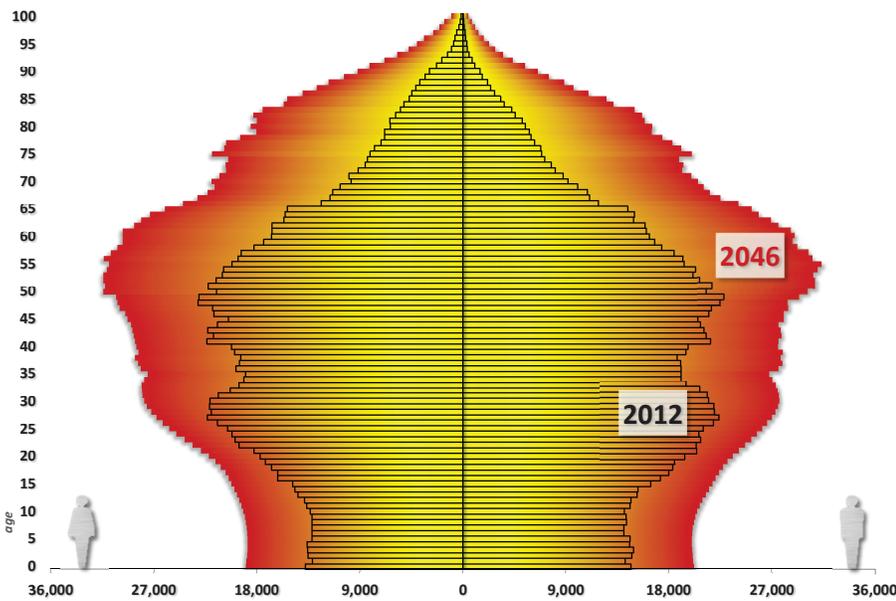
Annual contributions made through **natural increase** are expected to grow slightly in the medium-term, from net additions of just under 11,000 in 2011 to just over 14,000 by 2017. From this point forward, however, additions through natural increase will begin to decline, as the annual number of deaths increases more rapidly than the number of births due to the leading edge of the post-War baby boom generation aging into the higher mortality stages of the lifecycle. By the end of the projection period, given the composition of the region's population and trends in age specific fertility rates and mortality rates, natural increase is projected to fall to only 778 additions by 2046.

Combining the projected level and composition of migration flows with the profile of age specific fertility and mortality and the inevitable process of aging provides the basis for a trend-based projection of the Lower Mainland's population over the next 34 years. This projection shows the region growing from 2.8 million residents today to 3.5 million by 2026 and further to 4.3 million by 2046 (Figure 9; previous page). As such, the coming three and a half decades would see the region add 1.6 million residents, growing by an average of 45,700 people per year.

Annual growth would be in the range of 1.7 percent between 2012 and 2018, which is on par with the average growth rate seen in the 1990s. In the post-2020 period however, the rate of growth would fall towards 1.3 percent and further to 0.9 percent by the end of the projection period. Notably, at no time during the next 34 years would annual growth reach the 2.3 percent per year average of the 1980s or the 2.4 percent annual average seen during the 1970s, in large part due to the declining contribution of natural increase to overall population growth.

Figure 10

Population Age Profile, Lower Mainland

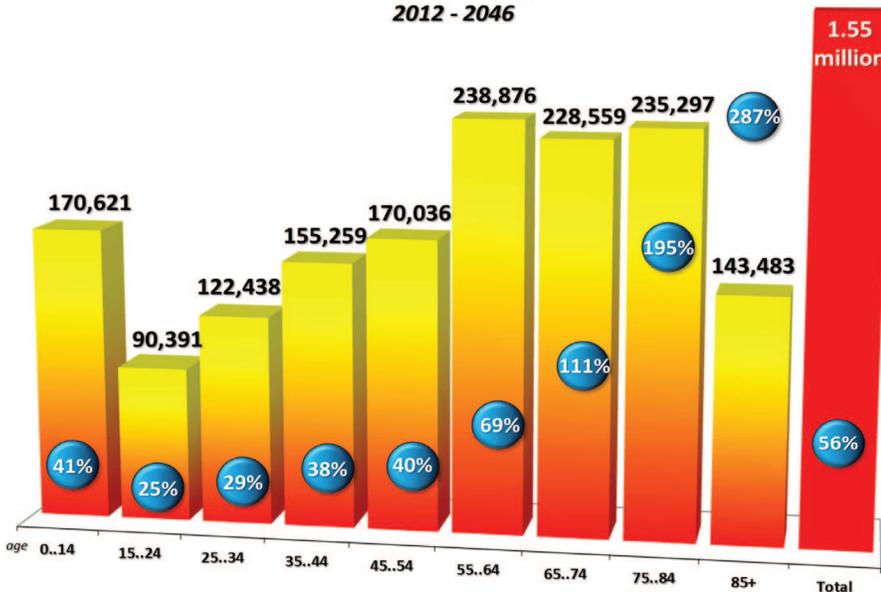


While the overall rate of population growth is expected to slow over the coming decades, the composition of the Lower Mainland's population will change significantly. One dimension of such change will be aging, as the baby boomers (the leading edge of whom are currently in their mid-60s) become senior citizens and benefit from long and increasing life expectancies (Figure 10).

More specifically, while the regional population is expected to grow by 56 percent, the fastest growing age group is expected to be those between the ages of 65 and 74, increasing by 111 percent (Figure 11). In addition to this growth, the number of people aged 75 to 84 is projected to almost triple, while residents aged 85-plus would see their numbers grow almost four-fold by 2046. Combined, the 65-plus age group is projected to grow by 607,339 people over the next 34 years.

Figure 11

**Population Growth by Age, Lower Mainland
2012 - 2046**



As a point of comparison, the prime working-aged population (aged 25 to 64) would add only slightly more people over the same period (686,609) than the seniors group. In other words, the Lower Mainland would go from having five working-aged residents per senior in 2012 to only three working-aged residents per senior by 2046.

From a transportation perspective, while

the number of working-aged residents is expected to grow, the region would go from having 58 percent of its residents in the prime working (and commuting) stages of the lifecycle to 53 percent by 2046. The aging of the region's population would see those over the age of 65 increase from 14 to 23 percent, again a shift that will have profound implications for all aspects of regional travel, from the frequency and mode of travel to the purpose, duration, and destination.

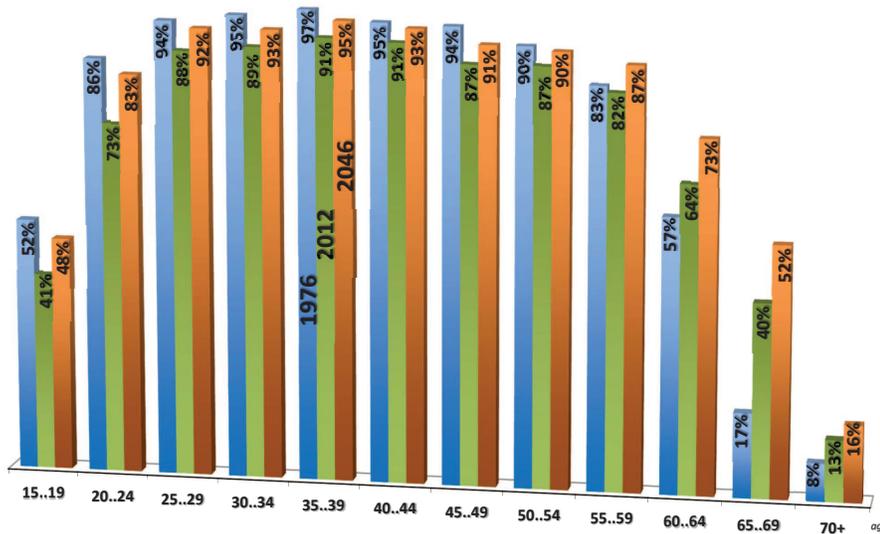
Before considering the details of a projection for the region's economy and jobs, it is first necessary to build on the demographic projections and consider how the region's labour force will grow. This is an important consideration, as the scale and composition of the Lower Mainland's labour force will have direct implications for how (and how much) the regional economy and employment will be able to expand.

Labour Force

Figures 12A and 12B show the strong lifecycle pattern of labour force participation for males and females. Data from 2012 show that age specific labour force participation rates for males increase from a low of 41 percent in the labour force entry stage of the lifecycle (the 15 to 19 age group) to a relatively uniform rate of about 90 percent through the prime working ages of 25 to 54. From the age of 55 on however, participation rates for males decline, falling to 82 percent in the 55 to 59 age group and further to 64 percent for the 60 to 64 age group (reflecting early retirement). By the time males reach the 65 to 69 age group their participation rate falls to 40 percent and further to 13 percent among those 70 and older.

Female labour force participation rates follow the same general lifecycle pattern as males, increasing from a low of 43 percent in the youngest age group (15 to 19) to peak in the range of 78 to 84 percent through the 25 to 54 year old age groups. The difference between male and female rates through this prime

Figure 12A
Male Labour Force Participation Rates, Lower Mainland

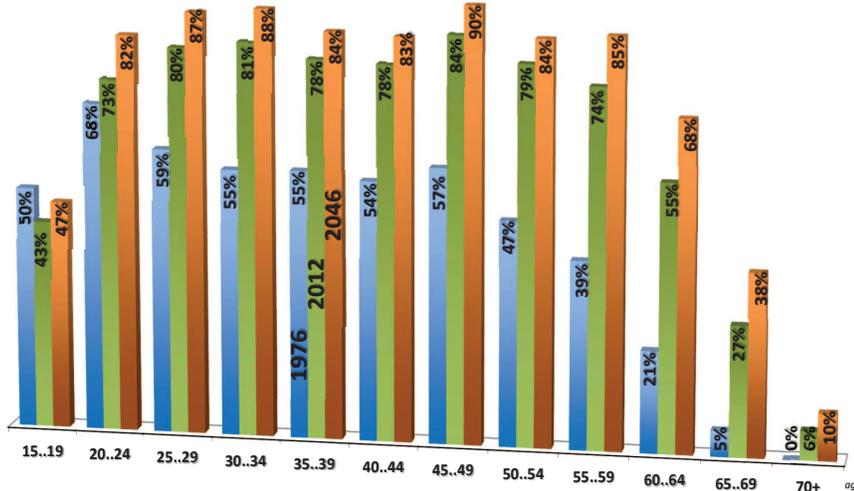


working stage of life generally corresponds to the ten percent of women in their late-20s and early-30s who have a child each year. Similar to male rates, participation for females begins to fall once the age of 55 is reached, falling to 74 percent for the 55 to 59 age group and further to 55 percent for those aged 60 to 64. For those between 65 and 69, participation rates fall to 27 percent, with only six percent of women 70 and older actively participating in the region's labour force.

In looking forward, given that labour markets are expected to tighten regionally, provincially and nationally, a reasonable scenario for future labour force participation would see increased participation rates for all age groups, with more significant increases being realized in the older age groups. More specifically, male participation rates are projected to increase into the 90 to 95 percent range for the 25 to 54 age group, and to 87 percent and 73 percent for the 55 to 59 and 60 to 64 age group, respectively. Similarly, the 65 to 69 and 70-plus age groups would see their rate increase to 52 percent and 16 percent respectively by 2046.

Figure 12B

Female Labour Force Participation Rates, Lower Mainland



In the case of females, historical trends in participation (compounded by trends towards lower birth rates and the postponement of childbearing) also point toward increasing rates—less so in the younger age groups, but more substantially so in the older ones. By 2046, female participation rates are expected to be in the range of 83 to 90 percent throughout the 25 to 54 age group, 85 percent in the 55 to 59 age group, and 68 percent for those aged 60 to 64 (13 and 15 percentage points above 2012’s rates).

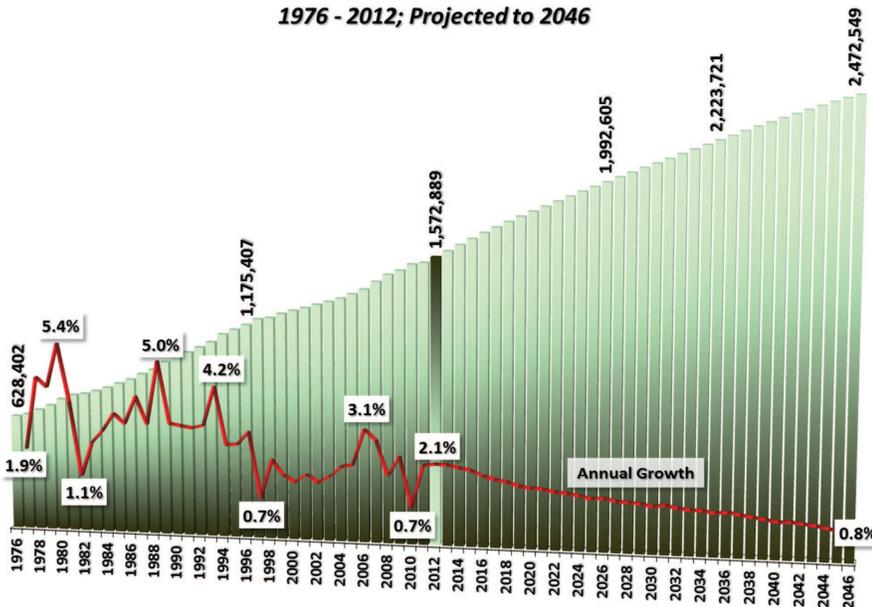
For the 65 to 69 year old female population, rates are expected to continue to increase, with up to 38 percent of this age segment active in the labour force by 2046 (14 percentage points above 2012 rates). The 70-plus group would also experience a dramatic increase in its participation rate,

with ten percent of females in this age group still in the labour force by 2046.

Figure 13

Total Labour Force, Lower Mainland

1976 - 2012; Projected to 2046



While male and female labour force participation rates are expected to increase in the coming years, the strong lifecycle pattern suggests that these increases over time will only partially offset the loss of labour supply as the baby boom generation ages towards retirement. In matching the projected regional population by age and sex with the corresponding projected labour force participation rates by age and sex over the coming 34 years, an outlook for the region’s labour force is achieved, accounting for both the changing demography within the Lower Mainland and changing behaviour with respect to participation in the labour force.

The projection shows the regional labour force increasing from 1.57 million people in 2012 to 2.47 million by 2046 (Figure 13). With the labour force expected to grow by 60 percent (932,000 additional labour force participants), annual growth would average 1.3 percent per year over the next 34 years.

In the context of this research, this pattern of labour force growth will have implications for employment and economic growth in the region; to the extent that there will always be some level of unemployment due to structural² and frictional³ adjustments, one can anticipate that employment growth in the region

² This refers to the unemployment caused by a mismatch between the demand and supply of skills

³ This type of adjustments refer to the unemployment which results from people moving between jobs.

over the longer-term will, to a large extent, be limited by the rate of growth in its labour force. In the case of this projection, all else being equal, this means being limited to 1.3 percent per annum growth range over the coming decades.

Economy & Employment

Methodologically, the regional employment projections are based on extending patterns demonstrated in the historical relationship between annual estimated sectoral employment in the Lower Mainland and real GDP for the province of British Columbia over the past two and a half decades. While this methodology is neither causal nor revolutionary, its overwhelming strength is rooted in the amount of historical data that are available, thereby permitting robust assessments of changes in the relationships between a growing and changing provincial economy and sectoral employment in the Lower Mainland. Forecasting regional employment in this manner accounts for historical changes in the absolute level of employment in each industry sector (i.e. the number of jobs), shifts in the overall industrial composition of the regional economy, as well as any implicit gains in productivity that particular sectors may have experienced historically.

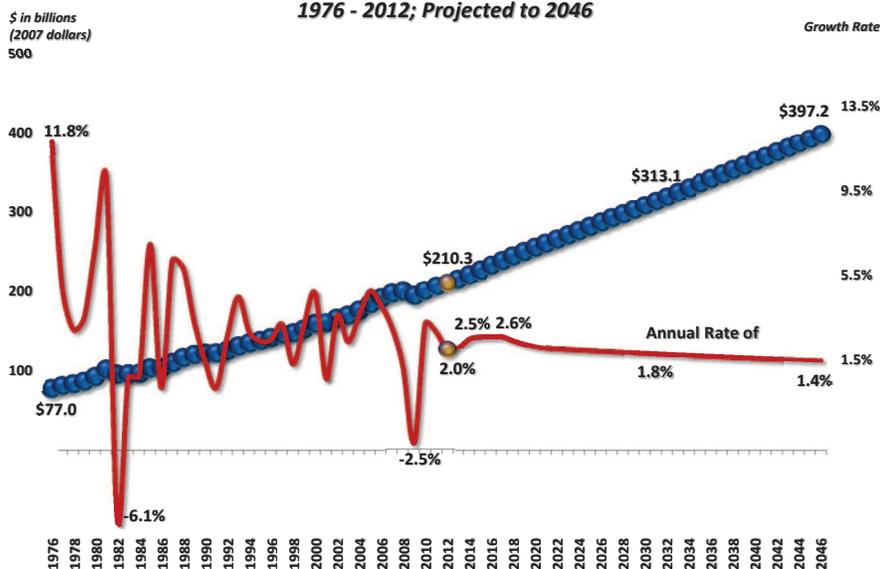
As future real GDP forms the independent variable in the mathematics of this approach, it is necessary to establish a long-run projection of real GDP for BC. The province's Ministry of Finance, through its annual economic update and outlook, provides short-term estimates of economic activity in BC, with current assessments anticipating annual economic growth in the range of 2.0 to 2.6 percent through to 2017. Beyond this short-term assessment, however, few long-range projections of economic activity exist.

Two main factors were considered in extending future growth of the provincial economy beyond 2017. First, the fact that much of GDP consists of factors that are population-dependent (for example, consumption, government spending, and imports) implies that slower rates of population growth projected in the coming years may also contribute to a slowing in the annual rate of growth in provincial economic activity. Further to this, as the capacity of the economy to expand will in large part be dependent on the ability of the labour force to expand (increasing productivity being the other contributing factor), growth in the provincial economy may also slow over the longer-term to match the pace of labour force growth.

This suggests two things for economic growth in BC (and other Canadian provinces). First, long-term growth in real GDP may not continue at rates consistent with recent history. Alternatively, the relationship

Figure 15

Real Gross Domestic Product, British Columbia 1976 - 2012; Projected to 2046

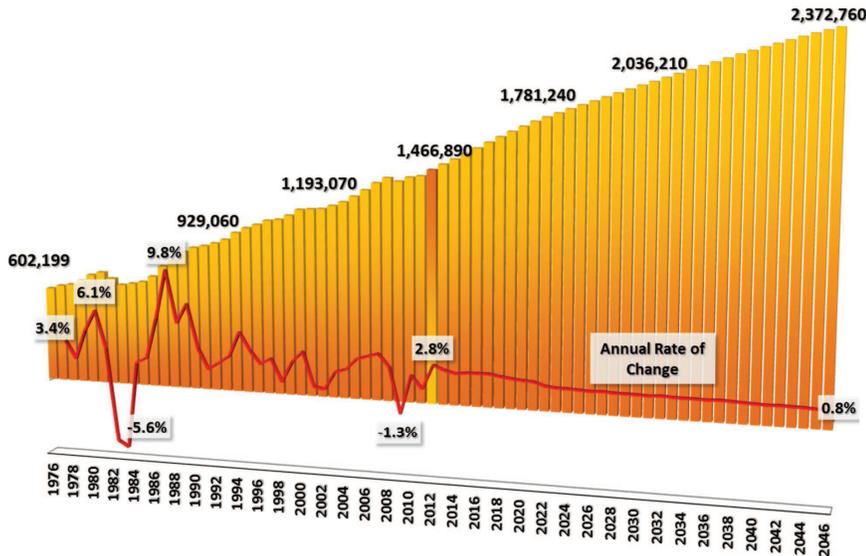


between GDP and employment observed in the past may change, moving in the direction of fewer jobs per unit increase in GDP. This implies future increases in productivity that are well in excess of what has been observed historically.

Considering these factors, long-range growth in BC's real GDP is projected to slow from the Ministry's estimates of 2.6 percent in 2017 to 2.0 percent by 2024 and further to 1.4 percent by 2046 (Figure 15). The result would see BC's real GDP grow from an estimated \$210.3 billion in 2012 to \$250 billion by 2020, cross the \$300 billion threshold by 2029, \$350 billion by 2038, to reach \$397.2 billion by 2046. Relative to the past 36 years when the province's

Figure 16

Total Employment, Lower Mainland
1976 - 2012; Projected to 2046



back towards four percent over the long-term (this was last achieved in 2007), a level that is consistent with what is commonly considered to be full employment. Another implication of this projection would be increasing levels of productivity in the region. Measured as total output per worker, labour productivity would need to grow by 46 percent over the projection period or by roughly 1.2 percent per annum. As a point of comparison, recent gains in labour productivity provincially have been in the range of 0.8 percent annually, well below the levels that will be required in the coming years to offset our aging population.

Projected Change by Industry Sector. The results from the sectoral projections show **FIRE** as the fastest growing industry sector in the region over the coming 34 years (Figure 17), expanding by 90 percent and adding 256,230 jobs by 2046. The number of workers in this industry would increase from the current eleven jobs per 100 residents to 13 per 100 residents over the course of the projection period, a level consistent with historical trends. Having said that, future employment growth in this sector, while robust,

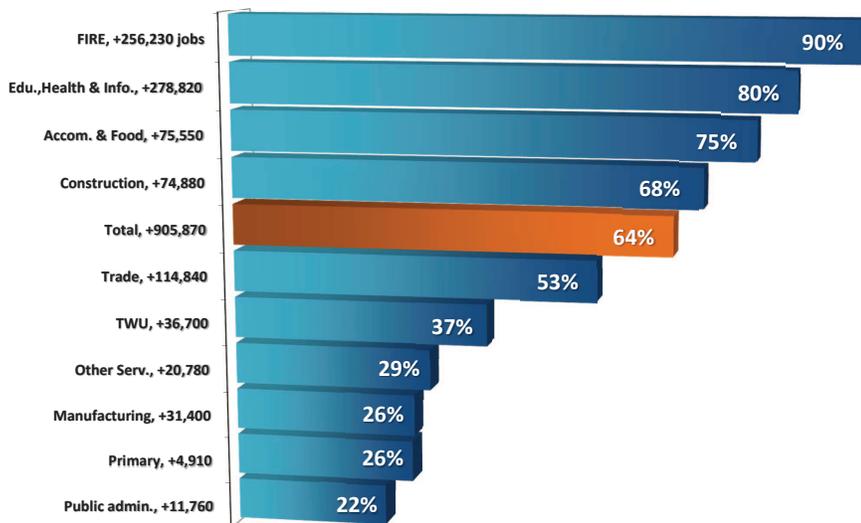
economy expanded at an average annual rate of 2.8 percent, the coming 34 years would see economic growth average only 1.8 percent per year.

Given this projected level of economic growth and the historical relationship between BC's GDP and employment in the Lower Mainland, total employment in the Lower Mainland is projected to increase from 1.47 million jobs in 2012 to 2.0 million by 2030 and 2.37 million by 2046. The next 34 years would therefore see regional employment grow by 64 percent, adding 905,870 jobs (Figure 16).

In considering this projection of regional employment with the future supply of labour in the region, the implication is that the regional unemployment rate would fall from 10.5 percent in 2012 to 4.5 percent by 2046. This would be a significant improvement, as the regional unemployment rate has been consistently above 10 percent since 2007. The regional unemployment rate would fall back towards four percent over the long-term (this was last achieved in 2007), a level that is consistent with what is commonly considered to be full employment. Another implication of this projection would be increasing levels of productivity in the region. Measured as total output per worker, labour productivity would need to grow by 46 percent over the projection period or by roughly 1.2 percent per annum. As a point of comparison, recent gains in labour productivity provincially have been in the range of 0.8 percent annually, well below the levels that will be required in the coming years to offset our aging population.

Figure 17

Change in Employment by Industry, Lower Mainland
2012 - 2046



would fall well below the 234 percent increase seen over the previous 36 years. The **Education, Health & Information** sector is expected to be the second-fastest growing sector in the region, at 80 percent. As the region's largest employment sector in 2012, this 80 percent growth would amount to 278,820 additional jobs over the next 34 years—the largest absolute growth projected for any sector.

Accommodation & Food Services is expected to be the third-fastest growing sector in the region over the next three and a half decades. By adding an estimated 75,550 additional jobs over the next 34 years, this sector would grow by 75

percent. In adding a projected 74,880 new jobs, employment in the **Construction** sector is also expected to grow at an above-average rate of 68 percent.

As shown in Figure 17, all other sectors would grow at or below the overall average of 64 percent. While **Trade** would only grow by 53 percent, given the current size of its employment base, the industry's 120,150 additional jobs by 2046 would represent the third-largest absolute increase, just behind FIRE and Education, Health & Information. **Transportation, Warehousing, and Utilities (TWU)** would see a 37 percent increase (36,700 new jobs) while employment in **Other Services** would grow by 29 percent (adding over 20,700 jobs) by 2046. Consistent with historical trends of slowly growing **Manufacturing** and **Primary** sectors, these industries are each expected to grow by 26 percent over the next 34 years.

Region-wide, the slowest-growing sector would be **Public Administration**, which is projected to grow by 22 percent, with only 11,760 jobs being added by the end of the projection period. Historically, this industry has experienced slow growth, which led to a noticeable decline in the sector's share of total employment between 1976 and 2012. More specifically, the 31,150 jobs in public administration in 1976 represented five percent regional employment in that year. By 2012, this industry employed 53,610 people, but it only represented 3.8 percent of total employment in the Lower Mainland; by 2046 its share is expected to decline further to 2.8 percent.

This projection shows further sectoral concentration of employment within the region. The three largest sectors would continue to see their shares of regional employment increase, from 60 percent in 2012 to 65 percent by 2046. Total employment in the service-providing sectors would also grow as a share of regional employment, increasing from 80 percent of jobs in the region today to 85 percent by 2046. The share of employment in the goods-producing sectors would consequently fall to 15 percent.

Of course, and as noted earlier, these projections are contingent on a certain degree of productivity gains being achieved in the coming years. While these productivity gains will in part be achieved by growing our skilled labour force and in part by continued specialization of economic activities within the region, an important consideration in the productivity discussion will be the ability to continue to move an increasing number of people, goods and services efficiently throughout the region as well as to the world over.

It is also important to recognize that, while a great amount of detail is provided in the previous pages, these projections are long-term in nature and therefore are more concerned with general time periods rather than particular dates in the future. While 1.5 million more residents in the Lower Mainland may be achieved by 2046, it may be also achieved before or after this date; although the date is uncertain, we do know that it will be achieved at some point and therefore needs to be planned for. What we also know is that along with growth will come a growing diversity of people and jobs. This will be accompanied by a growing range of travel frequency, purpose, destination, and duration as well as a growing diversity of modes over which those trips are conducted. Recognition of this growth, and growing diversity, should be a guide to discussions of future infrastructure investments within the region.