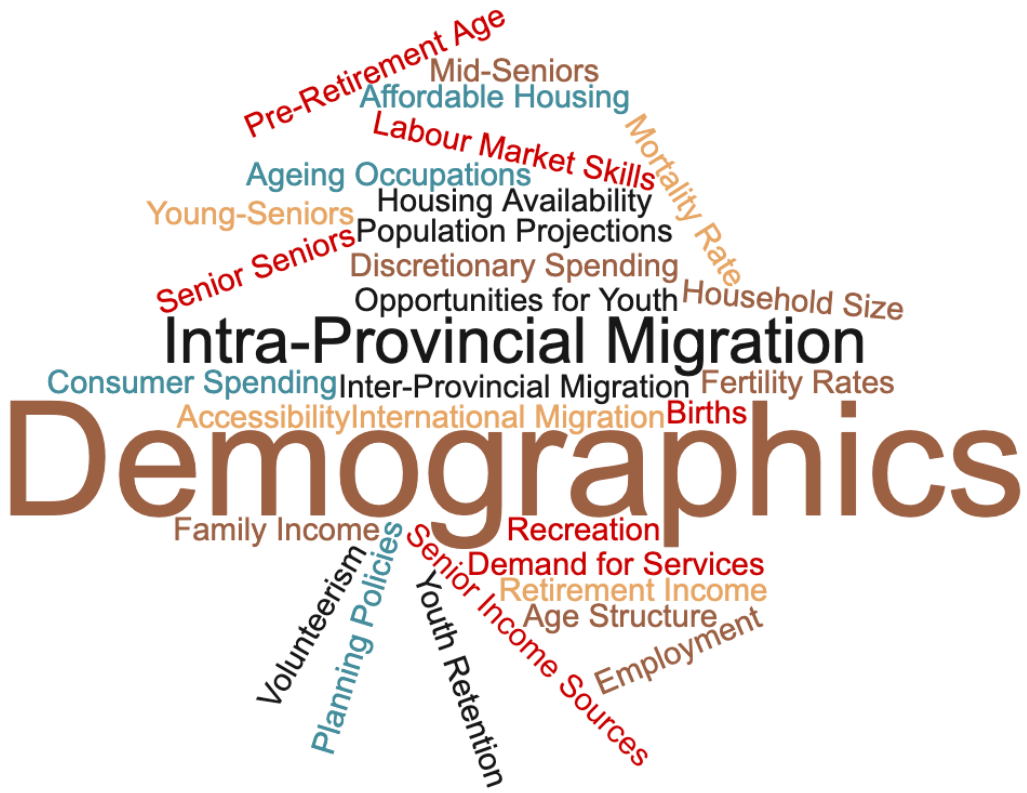
A Working Paper on Torbay Demography and Social Economic Characteristics



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Overview of the Report

Notice to Reader

All of the data used throughout this analysis have been sourced from either Statistics Canada or the Newfoundland and Labrador Statistics Agency, supplemented by observed localized employment data where possible. All models and projections have been created by the Harris Centre's Regional Analytics Lab. Every effort has been made for accuracy but these are projections and subject to change.

Please note that the bulk of the analysis and projection modelling was completed prior to the onset of the COVID-19 pandemic; extreme impacts on such factors as the business registry and employment listings may not be reflected at the time of publication. However, the models and projections developed in this study should have a fundamental role to play in contextualizing the various demographic and economic impacts that the COVID-19 pandemic has had on the NE Avalon area as data is released into the future.

Background

The report on Torbay contains a discussion on its demography and social economic characteristics within the context of an ageing population. As such there is a summary of demographic models used in the study and a discussion of the population, age structure, migration, and population model outcomes. Using the population characteristics and projections the study examined the following:

- demography (age structure, migration patterns and projections)
- regional connections (commuting and regional trade flows),
- the economy
- comparative advantage (local demand versus exports)
- occupation trends and the ageing factor
- income sources
- housing types and demands
- consumer spending

There were 3 population models used in the study:

- Historical Cycle: Migration alternates between periods of high and low growth, the timing and magnitude of which are determined from historical migration data;
- No Migration: Migration is set at zero for the duration of the time frame – used in conjunction with the other models to assess the relationship between population dynamics and migration;
- Migration: Migration is set at the volume required to meet either 50%, 70% or 100% attrition targets. Retirements, new entrants, worker deaths, unemployment and participation rates etc. are incorporated into this calculation;

Demography

The 2016 population of Torbay, based on individual age counts, was 7,875. The 2016 age structure for Torbay is that of an ageing population with a high number of youth age cohorts because it is attractive to people settling to start families. There is a higher concentration in the 35-39 to the 55-59 age cohorts with 11.5% more than expected and is typical of an ageing workforce.

The analysis of the population projections can be summarized as follows:

- The results of the 3 different population models, using their assumptions about births, deaths, and migration, estimate that by 2035 the population of Torbay could vary from a low of 7,624 for the no migration model (represents a decrease in population) to a high of 9,224 for the historical model. The targeted migration model estimates the population to increase to 7,945.

- For the population to grow in Torbay as well as the CMA overall regional in-migration is the only option for growth.

- Since 2015/2016 to 2018/2019 the St. John's CMA net migration gains through immigration and intra-provincial migration has been offset by increasing net negative inter-provincial migration. On average net migration over this period has been declining by approximately 914 persons per year and are highlighted by the following trends:
    - Immigrants gains ranged from a low of 693 to a high of 1135
    - Inter-provincial migrations losses from a low of -2600 to a high of -347
    - Intra-Provincial Migration gains ranged from a low of 795 to a high of 1279

The St. John's CMA migration trends can be summarized as follows:

- For immigrants youth and young adults dominate with 485 of the total 693 immigrants arriving during this period and range in age from 0-4 to 30-34 years
- In the case of net interprovincial migration 785 of 1,277 people who left the province were between the ages of 20 to 24 and 40-44. Out of this group 559 where in the 20-24 and 30-34 age cohort.
- For intra provincial migration 1,117 of 1,279 migrants were aged between 15-19 and 40-44. However, 734 were in the 15-19 to 20-24 cohorts.
- For retirees the migration factor is not significant but during the period only 65 aged 65+ moved from other regions of the province to the CMA while 105 left for other provinces.
- Given the number of births versus deaths within the CMA natural population growth through births alone will not be a factor in sustaining future population growth. For example, in 2016/2017 there were 2,066 births and 1,604 deaths thus the net growth from these two components was 462 and by 2018/2019 this was reduced to a net growth of 200. Thus, births are remaining relatively stable or declining while deaths are increasing because of the ageing factor within the population.
- If historic trends continue until 2035 the estimated average age will be 42.8 years, an increase of 2.2 years from 2016 (40.6 years). According to the model if historic trends continue deaths (1,455) will exceed births (996) by 2035.

- The targeted migration model where young workers are recruited to replace retirees offers a different scenario where the average age is estimated to be 41.2 an increase of only 0.6 years over the forecast time. Furthermore, births (1,477) slightly exceed deaths (1,456).

. The most notable changes in the 2035 age structure is:

- As a proportion of the population there is a 17.8% decrease in the 0-4 and 15-19 age cohorts. This decline is associated with lower-than-replacement fertility rates.
- Attracting younger workers or retaining them does not guarantee long term sustainability or growth of the population because of low fertility rates amongst younger adults and in-migration will be the main driver for population growth.
- The historic model 2035 projected increase for the 70+ age cohort is 17.1%.
- It is projected that by 2035 the 0-19 and 65+ age cohorts will represent 17.8% and 19.8% of the population respectively and supports the ageing factor in the population.

The outcomes from the population models can be summarized as follows:

- The historic model estimates that the population will increase from 7,875 in 2016 to 9,224 by 2035 or an increase of 17.1%
- The targeted migration model indicates that the population will increase from 7,875 in 2016 to 7,945 or a 0.8% increase.
- For age cohort 65+ both the historic and targeted migration model produced similar estimates where the historic model estimated an increase from 850 in 2016 to 1,828 in 2035 or a 115% increase while the target model estimated the 65+ population to be 1,812 or a 113% increase. Important to note that the models indicate that no matter what scenario is implement in the forecasting the ageing factor is a constant.

Regional Economic Connectivity

Connectivity between places refers to the degree to which places are connected in terms of people (e.g. commuters), goods/commodities and services. A municipality's role in a regional economy is generally revealed by examining worker commuting patterns as well as supply chain flows or value transactions/ linkages of commodity flows amongst industries. This includes goods and services associated with retail and public sector industries.

- Of the estimated 3,305 commuters originating in Torbay 7.26% of the workers commute to work within the boundaries of the town, 81.39% go to St. John's, 7.26% go to Mount Pearl, 3.03% have an external destination and 1.06% go to Paradise.
- Of note is the high percentage values associated with St. John's as a destination from other municipalities. For example, of the 10,540 commuters associated with Conception Bay South 54.46% commute to St. John's for work, 65.88% of Paradise's 9,745 commuters go to St. John's and 64.92% of Mount Pearl's 10,035 commuters travel to St. John's for work.

- Portugal Cove-St. Philip's and Torbay have a somewhat higher dependency on St. John's with 76.31% and 81.39% respectively, of its commuters travelling to the city for work. St. John's is a core destination for journey to work flows and reflects its Statistics Canada status as an urban centre and proximity to these types of centres generates growth within the region.
- Due to high (out) commuting and low in commuting, Torbay has a daytime population of 5,150 and this represents a decrease of 34.6%. These declines represent a significant daily reduction in population and may impact some businesses. However, the return commute offers intervening opportunities and generally businesses are located to take advantage of these commuters.
- In the case of Torbay 65.16% of supply chain value transactions occur between businesses within the town's boundaries. Value based transactions from Torbay businesses to other businesses in 4 of the other municipalities are less than 1.5% while there is a 20.72% supply chain flow from Torbay to St. John's and a 12.63% flow to places External to the region.
- The supply chain transactions from the other 5 municipalities to businesses in Torbay are all estimated to be less than or equal to 1%.

Torbay Economy

The top 3 industries by estimated employment in Torbay are:

- Construction (469)
- Food services and drinking places (143)
- Food and beverage stores (136)

For construction there are on average 469 employees associated with this sector where:

- 299 are directly employed with construction companies
- 170 (36.2%) are classed as indirect employment and linked to the spinoffs associated with the construction industries**.**
- **Out of the top 25 industries this is the highest overall indirect job spinoff and signifies the importance of this sector to the town's economy**. For this sector, 100% are employed in SME's with less than 200 employees.

Sectors that produce final demand products in general support fewer indirect jobs. For example, food services and drinking places directly employs 127 workers but the indirect spinoff jobs are 16 or 11.5% of the total jobs linked to these industries.

Extraction type industries where the raw material is directly exported (e.g. oil and gas extraction exports 90% of its output) produce high GDP per worker but the real impact is in the direct employment of workers as well as the associated spinoffs of additional jobs in businesses that supply this sector.

In the case of architectural and structural metals manufacturing approximately 63% of the total multiplier[1] ($1.88) is realized locally and $0.69 is lost to the region's economy for every $ spent in purchased externally/outside the region by this sector. These economic leakages are generally the result of two factors:

[1] In this example only direct and indirect impacts are assessed and induced impacts will be available at later date.

- Locally, industries in the supply chain (indirect) do not have the capacity to meet the intermediate goods and service requirements for an industry's operation (direct) and the shortfalls are imported
- Some of the goods/services required for operations/production are not produced locally and are imported

In the case of architectural and structural metals manufacturing it is probably maximizing the local supply chain in terms of intermediate purchases of goods and services and given factors related to both capacity and economies of scale achieving 63% of the total $1.88 multiplier is optimal (e.g. it's probably not realistic to expect raw steel to be produced locally).

Construction Connections

On average the region-wide construction sector annually purchases almost $4.5 billion worth of inputs of 259 unique suppliers[2] . Proportionally, 70.9% of the inputs are purchased locally, 3.9% from other parts of the province and 25.2% from trade (other provinces or countries).

An assessment of the origins of inputs related to the architectural, engineering and related services accounts for 7.6% of the $ transactions between these industries and the construction sector and 82.6% is sourced locally.

Note that the indirect wages and salaries accounts for 24.7% of the transactions. Overall the inputs that were considered account for 60.5% of all $ value transactions linked to the construction industry. The direct and indirect job and dollar multipliers for construction are 1.57 and $1.25 respectively. Thus, it is estimated that every local construction job indirectly supports 1.59 jobs in the province of which 1.57 are local. Every $1 in local construction expenditure on average indirectly generates overall another $1.57 in the economy of which $1.25 is local.

Note these estimates are based on averages and do not include induced effects (e.g. impact on consumer spending through wages and salaries) which has a significant impact on the local economy. **Any downturn in this sector will have a significant impact on its supply chain and the overall economy.**

Occupational Trends and Ageing

Skill levels of the workforce is a reflect of the type of economy that exists in a city or region and Statistics Canada national occupation codes (NOC) are linked to the following skill levels where:

- Skill A refers to a class of workers and related occupations that have a university education,
- Skill B refers to those workers whose education and training is primarily obtained through colleges and apprenticeships,
- Skill C includes workers who have a high school education that is associated with some occupation specific training and

[2] In this case unique suppliers refers to the North American Industry Codes (NAIC) used in the Stats Canada Business Registry databases.

- D level skills are related to on the job training whereby the workers may or may not have completed high school.

Using the historic population model:

- Skills A, B, and C continually increase at varying rates from 2016 to 2035 if historical migration trends continue for the North East Avalon Urban Core where skill level A increase from 39,025 in 2016 to 50,596 by 2035.
- Skill level B increase from 58,105 to 65,989 and
- Skill level C increase from 39,300 to 45,083 for the same period
- However, skill level D increases from 22,138 in 2016 to 23,105 by 2025. There is a decline from 23,105 in 2025 to 22,619 by 2030 with further decline to 22,603 by 2035.
  Although there is an overall net increase from 2016 to 2035 (e.g. 22,138 to 22,603) the 5-year interval predictions indicate a year to year decline. For example, from 2020 to 2025 there is a decline of 0.4%, 2.1% decline from 2025 to 2030 and a 0.1% decline from 2030 to 2035.

An examination of the overall net growth from 2016 to 2035 skill level A increases by 29.6%, B by 13.6%, C 14.7% and D 2.1%. **These increases represent "potential" and the numbers are reduced by actual participation rates and, the question becomes, do the differences between the "potential" and "actual" participation rates provide enough replacement workers for those retiring?**

The big factor in the workforce is ageing occupations. The 2016 census indicates that within the St. John's CMA labour market:

- Out of 103,005 workers 3,105 or 3.01% were aged 65-74 years and only 275 or 0.27% were aged 75+ years
- In 2016 there were 19,125 people in the CMA aged 65-74 and according to the occupation data 16.2% were working while 275 out of 5560 aged 75+ years or 4.9% were employed.
- Generally, the 65-74 age group or young seniors are the most active and the challenge will be to increase their participation in the labour market when there are worker shortages either by extending their careers, if appropriate, or where possible take a new career path post current retirement age.

Occupations that employ at least 100 people and where young workers make up less than quarter of the workers in an ageing occupation (ratio ≤ 0.25)[3] are:

- Senior managers - financial, communications and other business services (ratio 0.19): 290 workers with an average age of 49.3and 36.21% of workers are aged 55+ years
- Senior managers - health, education, social and community services (ratio 0.13): 260 workers with an average age of 51.7 and 30.77% of workers are aged 55+ years

[3] The ratio of 0.25 or less is used to identify those occupations that are rapidly ageing and very few young workers are employed in an occupation. Note that there are occupations where there are fewer young workers because of the education requirements and years of training. In those cases, it is important to examine the average age of the occupation to make an assessment.

- Senior government managers and officials (ratio 0.18): 205 workers with an average age of 50.8 and 26.83% of workers are aged 55+ years
- Other business services managers (ratio 0.22): 135 workers with an average age of 50.4 and 33.33% of workers are aged 55+ years

For Skill Level A where ratios indicate that young workers make up less than quarter of the workers in an ageing occupation (ratio ≤ 0.25)[4] are:

- University professor and lectures (ratio 0.13): 1040 workers with an average age of 50 and 35.10% of workers are aged 55+ years
- Professional occupations in religion (ratio 0.18): 120 workers with an average age of 53.3 and 45.83% of the workers are aged 55+ years

For skill level B or occupations where college or apprenticeships are required. There is only one occupation considered to be ageing rapidly (ratio = 0.20) with two others approaching the high ageing factor with ratios of 0.30 and 0.33. The three occupations within these categories are:

- Contractors and supervisors, mechanic trades (ratio 0.20): 155 workers with an average age of 47.2 and 32.26% of the workers are age 55+ years
- Drafting technologists and technicians (ratio 0.30): 155 workers with an average age of 49.4 and 32.26% of the workers are age 55+ years
- Other service supervisors (ratio 0.33): 105 workers with an average age of 46.2 and 28.57% of the workers age 55+.

Skill level B occupations that are exhibiting an imbalance between young and older workers are:

- Real estate agents and salespersons
- Medical administrative assistants
- Executive assistants
- Contractors and supervisors, heavy equipment operator crews
- Heavy-duty equipment mechanics
- Drafting technologists and technicians
- Contractors and supervisors, mechanic trades

Skill level C occupations that require at least a high school diploma and/or some post-secondary training along with on the job training. These occupations are experiencing, in various degrees, young versus older worker imbalances with ratios less than 1.0. There are three occupations with high disproportion between younger and older workers where the ratios are 0.25 or less and they are:

- Taxi and limousine drivers and chauffeurs (ratio 0.17): 265 workers with an average age of 53.2 and 54.72% age 55+
- Bus drivers, subway operators and other transit operators (ratio 0.08): 245 workers with an average age of 51.7 and 48.98% age 55+

[4] The ratio of 0.25 or less is used to identify those occupations that are rapidly ageing and very few young workers are employed in an occupation.

- Survey interviewers and statistical clerks (0.25): 110 workers with an average age of 48.8 and 36.36% age 55+

Other skill level B occupations that are starting to transition where the number of older workers is becoming dominate are:

- Home support workers, housekeepers, and related occupations
- Transport truck drivers
- Security guards and related security service occupations
- Heavy equipment operators (except crane)
- Elementary and secondary school teacher assistants
- General farm workers
- Couriers, messengers and door-to-door distributors
- Letter carriers

Skill level C occupations that are ageing and require on the job training. There are no occupations where the number of older workers is dominating an occupation (ratio ≤ 0.25) but there are six occupations where the older workers are more than twice the number of young workers (ratio < 0.50) and they are:

- Janitors, caretakers and building superintendents (average age 46.9)
- Landscaping and grounds maintenance labour (average age 47.7)
- Public works and maintenance labour (average age 48.3)
- Other sales related occupations (average age 48.0)

Occupations where employment for workers age 65-74 is at least 2 times above the CMA average for that cohort. There are 14 occupations where young seniors represent at least 10% of the employees and they are:

- Specialist physicians
- Real estate agents and salespersons
- Accounting technicians and bookkeepers
- Taxi and limousine drivers and chauffeurs
- Senior managers - construction, transportation, production, and utilities
- Corporate sales managers
- Bus drivers, subway operators and other transit operators
- Couriers, messengers and door-to-door distributors
- Sheet metal workers
- Other business services managers
- Professional occupations in religion
- Other sales related occupations
- Accommodation service managers
- Managers in agriculture
- Authors and writers

The top five employers with at least 5% of their workforce age 65-74 years are:

- Home support workers, housekeepers and related occupations

- Janitors, caretakers and building superintendents
- University professors and lecturers
- Transport truck drivers
- Security guards and related security service occupations

Occupations where there are at least 100 younger workers employed and there are twice as many young workers as older workers. There are 11 occupations where the ratio of younger to older workers is 5 or higher and these occupations are:

- Food and beverage servers (ratio 11.0): 385 workers, average age 27.5 and 2.95% of total workforce is age 55+ years
- Early childhood educators and assistants (ratio 5.2): 260 workers, average age 35.8 and 5.68% of total workforce age 55+
- Post-secondary teaching and research assistants (ratio 8.0): 240 workers, average age 32.4 and 5.41% of total workforce age 55+
- Hairstylists and barbers (ratio 5.8): 230 workers, average age 35.8 and 6.11% of total workforce age 55+
- Mechanical engineers (ratio 6.1): 215 workers, average age 37 and 7.07% of total workforce age 55+
- Computer programmers and interactive media developers (ratio 6.4): 160 workers, average age 37.7 and 5.75% of total workforce age 55+
- Petroleum engineers (ratio 15): 150 workers, average age 36.1 and 2.94% of total workforce age 55+
- Industrial electricians (ratio 9.3): 140 workers, average age 35.3 and 5.36% of total workforce age 55+
- Professional occupations in advertising, marketing and public relations (ratio 5.2): 130 workers, average age 39.0 and 7.46% of total workforce age 55+
- Bartenders (ratio 6.0): 120 workers, average age 31.3 and 5.97% of total workforce age 55+
- Estheticians, electrologists and related occupations (ratio 7.0): 105 workers, average age 32.4 and 5.26% of total workforce age 55+

For younger workers age 24-34 in the St. John's CMA:

- 68.05% are employed in occupations that require university (skill level A) or college/apprentice (skill level B) training.
- 23.65% are employed in occupations that require some post-secondary or on the job training (skill level C)
- 8.31% are employed in occupations that generally require on the job training (skill level D)
- Young workers employed in in occupations requiring skill levels A and B are very mobile workforce that will migrate to other provinces or countries if there are declining opportunities locally. However, they are also occupations that, for the most part, will attract younger workers when opportunities for employment are available locally.
- Younger workers in skill levels C and D are somewhat less mobile but will leave a region if there are limited opportunities.

- Another issue is that younger workers are predominantly more educated than a generation ago and the ageing factor in some occupations requiring C and D skills will potentially be a challenge in attracting younger workers because of skill mismatches. This potential labour shortage can be filled by immigration or automation where possible.

Income Distribution and Sources

The average **recipient** income for the North East Avalon Urban Core is $52,900 which is much higher than the rest of the province where the average income is $40,700.

The distribution of household income indicates that:

- the rest of NL 51.80% earn less than $60,000 while in the Urban Core only 31.73% of the Urban Core households earn less than $60,000.

- 68.28% of the households in the Urban Core earn $60,000 or more while only 48.2% of the rest of NL fall within this income category.

This income distribution is reflective of what drives the economy in the Urban Core, oil and gas, construction, government services, professional consulting, and universities etc. where the higher skilled and educated workers are more concentrated than the rest of the province.

For 2016 Torbay generated a total household income of $349 million where 91.9% was market income and 8.1% in government transfers.

During 2016 Torbay retirees had a total income of $33.2 million of which 65.6% came from private retirement income, 18.7 % from CPP retirement benefits, and 15.8% from OAS and GIS.

Housing Types and Demands

Within the St. John's CMA income is correlated with home ownership and subsidized renters.

Of note here is that 53.20% of the $30,000 to $59,999 income class are owners while only 29.20% of the $30,000 or less class are owners. There are 29.8% of the households earning $60,000 or more living in subsidized rentals and 7.1% of these households earn $100,000 or more.

In 2016 80.9% of the houses in Torbay were single detached dwellings, 18.2% were apartments and 0.9% were row houses/semi-detached dwellings.

When considering age of the primary household maintainer:

- 14.5% are aged 30 years or less,
- 70.3% are in the 35-64 age cohort and
- 15.2% are in the 65+ cohort.

Note that in 2016 62.9% of the households in Torbay contained 2 persons or less, 18.3% had 3 persons, 12.9% had 4 persons and 5.8% had 5 persons or more.

Given the fertility and demographic characteristics of the town it is likely that the future dominant household sizes will be 3 persons or less and in 2016 this class of household size accounted for 81.2% of the households**. Given that it is projected that from 2016 to 2035 the population age 65+ 2016 to 2035 will increase by 115% this raises a question of the suitability of existing housing stock for smaller households and seniors.**

Future housing demands will have to consider the suitability of existing housing stocks to meet the shift in household sizes and whether renovating unsuitable houses is a viable option. This issue of existing stock suitability is evident by the predicted trends for household size where the largest future demand is for 1 to 2-person households.

If the historic trends continue to 2035 there will be a demand for:

- 20 dwellings for 1 or 2 persons per year
- 4 dwellings per year for 3 or more person families.

Consumer Spending

Growth in consumer spending is dependent on population growth, the state of the economy and increases in incomes.

- Using the historic demographic model and incomes by age cohort it is estimated that the total income for Torbay will increase from $330 million in 2016 to $403 million by 2035 or a 21.9% increase or on average an additional $3.8 million per year.

Note that above estimate is based on historical trends whereby the population ages and there are few young people within the town. More opportunities for younger workers and a population growth strategy would change the results.

If the demographic and migration trends hold where younger workers either leave the province or move from surrounding municipalities the total income for those workers aged 30 years or less will increase by 56% and 1% for the 30 to 39 age cohort. However, total income for the 40 to 54 age cohort will decrease by 22%, **55 to 64 increases by 71% and the 65+ cohort total income increases by 137%.**

All demographic models used in the study are consistent on the predicted increase for the 65+ age cohort and the increase in total income is more likely to occur especially because a high portion of retirement income is linked to private retirement. If the predicted growth in income holds for the 65+ age cohort there will be opportunities for businesses to provide services for this cohort.

An analysis of discretionary spending for the study area indicates that on average 25% of the spending is linked to external travel and accommodations. The challenge associated with discretionary spending is consumer behaviour and changing the culture of current spending patterns is one of education and promotion of alternatives that benefit seniors while enhancing their lifestyle. Given that by 2035 the population of seniors in Torbay may increase by 115% it may be prudent to examine in more detail the consumer behaviour of seniors within the town as well as the region.

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1.0 Introduction

The role of urban municipalities in the economic development of the province is changing. The concentration of services and businesses in these regional clusters is a well-established element of the provincial economy. Also, these clusters represent population growth areas and destinations for both younger and older migrants. However, in some cases the growth in some clusters are mostly due to intra-provincial migration of older migrants seeking proximity to services that are not necessarily available in smaller communities.

For larger clusters, like the North East Avalon, where there are universities, tertiary health care services, a high concentration of provincial and government employment, and more diverse economies the migrants tend to be on average younger but there is also an element of older migrants that move to be near services and extended families. However, because of low birth rates and the cyclic nature of the labour force these urban populations are also ageing.

The purpose of the working paper is to examine the demography of Torbay within a regional urban context while providing a reference to a selection of regional economic indicators that will provide some insight to how demography plays a role in its future economy. As such, the demographic analysis examines the projected future age structure of the population and the potential consequence of having an increasing number of the population classed as senior citizens.

In this case the six participating municipalities Conception Bay South, Mount Pearl, Paradise, Portugal Cove-St. Philip's, St. John's and Torbay are referred to as the North East Avalon Urban Core while recognizing that the non-participating communities of Bauline, Flatrock, Logy Bay-Middle Cove-Outer Cove, Pouch Cove, Petty Harbour-Maddox Cove, Witless Bay, and Bay Bulls are a part of the region (Figure 1). To illustrate a municipality's role within a regional economy connectedness/linkage for labour and economy as well as demographic, economic and households and spending patterns are presented.

Note that a future web application being developed by RAnLab will enable municipalities to upload local data, run their own analysis and generate reports with the most recent data available from various federal/provincial government agencies.

The main sources for the data are the Statistics Canada Business Registry (2001 to 2018), 2016 Canada Census and the "unsuppressed 2015" provincial input-output tables. For the analysis, exact employment data are used where possible. However, when this data was absent the interval or classified employment data from the business register are used to fill the gaps. ***The numerical results (e.g. employment, economic/job multipliers etc.) presented in the working paper must be interpreted as "weighted averages (WA)" for the municipal and the regional comparisons.*** Thus, counts, may not add up to the exact provincial values from the input-output tables but the proportions for comparative purposes will be correct.

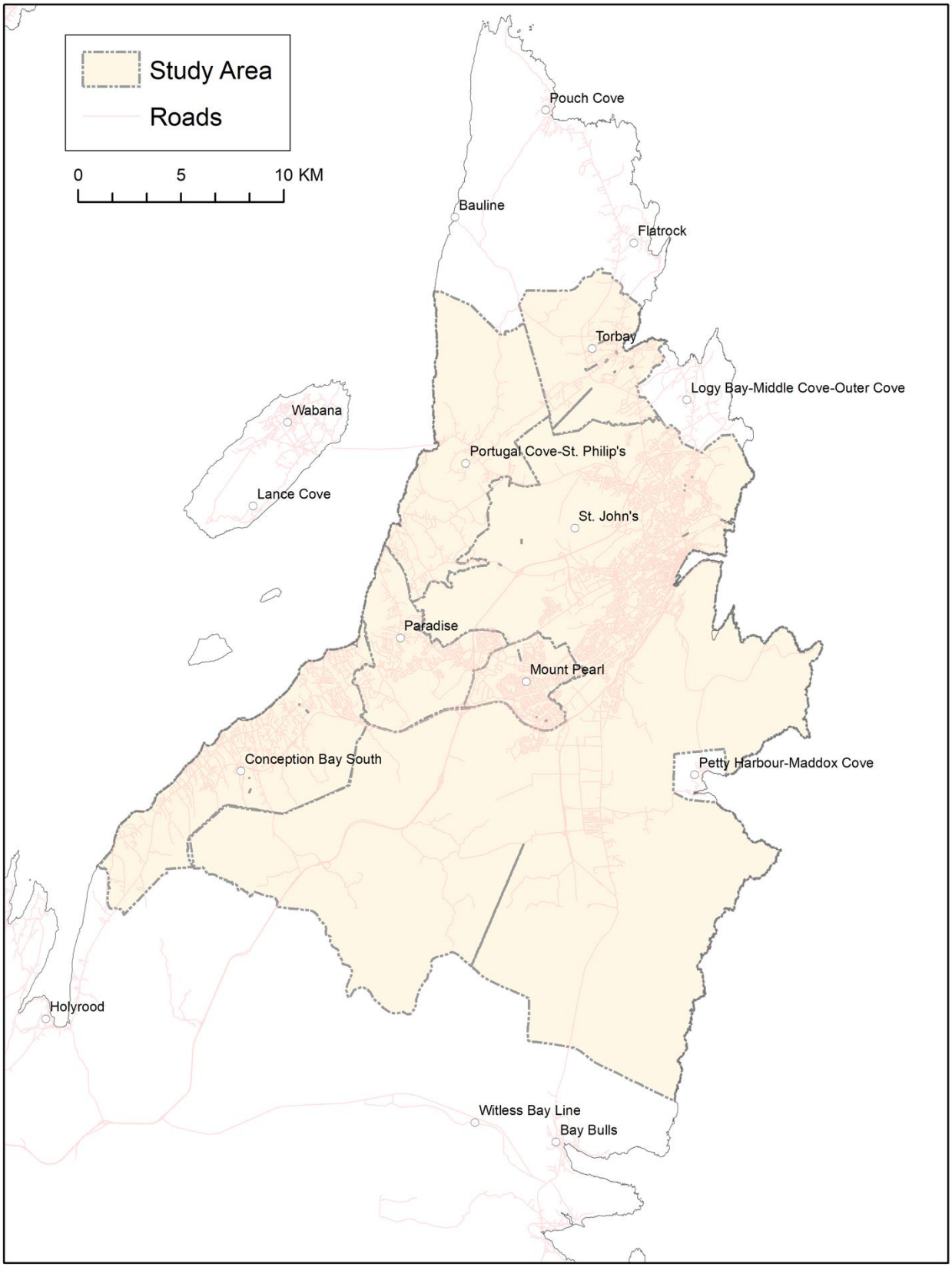

Figure 1: North East Avalon Urban Core

2.0 Demography

Population forecast models are used to predict the population count and age structure of a place at points in time from a known population. Predictions are based on assumptions about the existing number of births and deaths that will occur during each time period as well as the effects of in and out migration.

The standard model for population analysis is the "cohort survival model". It is based on the idea of the cohort that represents a group of people in the same age category (e.g. 0-4, 5-9, 10-14 etc.). When individual age data are available, the model is referred to as an "age specific survival model" whereby individual ages (e.g. 1, 2, 3, 4, 5…. 100) are used. Thus, the future population of a specific age is based on how many in that year are expected to survive to reach another age. For example, what are the odds of an individual who is 65 now reaching the age of 66 in a year? This is estimated by multiplying the initial population of the specific age by the survival rates for each successive individual age. The "survival rate" includes quantitative information on births, deaths as well as in and out migration. Note that age specific birth and death rates are generally held constant over time unless there are factors or evidence that may increase or decrease these rates.

For this study, the "age specific survival" model is used to assess the future trends in age structure and population change. The outcomes from this analysis will provide baseline information that can be integrated with other models to assess impacts and structure policies for regional planning and development.

However, to develop population growth scenarios that are based on variations of model assumptions the basic population survival model is re-formulated to a hybrid adaptive model that permits the computation of various scenarios. This re-formulation of the age specific model will permit the assessment of how changing the inputs to the model will affect the long-term growth of a population. For example, can existing municipal age structures, fertility, mortality and migration rates provide the required growth to meet future labour demands in the economy. Within this model one can vary birth and death rates by age, in/out migration patterns and estimate various growth scenarios for each municipality.

Three survival models are used to forecast outcomes that are used for analyzing the future population trends in the IGA regions and they are:

[1] The **No Migration Model** where the in- and out-migration rates are set to zero whereby population change is dependent on age specific births and deaths only. Outcomes from this analysis provide information on a municipality's ability to sustain or increase future population levels given the combination of the municipality's age structure and expected fertility and mortality rates. If a municipality cannot sustain or grow its existing population through this natural replacement model it reflects underlying issues associated with fertility and death rates, and possibly youth retention as well as the impact of ageing populations.

[2] The **Historical (Cyclic) Survival Model** where the migration rates are set to cycle through periods of high and low growth, continuing the cyclic pattern of population changes as seen during the last 10-15 years. The migration component of population change is decomposed into intra-provincial, interprovincial, international in-migration, and total out-migration. In addition, the migration calculation utilizes a "migration propensity" for each specific age combination based on geography and historical trends, which ensures that migration volumes remain sensitive to shifts in population levels over time. Thus, if the existing fertility and mortality rates as well as the historic cyclic nature of migration repeats itself in the 10 to 15 year cycles in the future what is the impact on future population characteristics.

[3] The **Target Migration Model** where net migration levels are calculated based on forecast replacement demands due to workforce aging. Firstly, retirements, worker deaths, and young workforce entrants over time are estimated using historical rates. Secondly, these values are combined to estimate the net in-migrants required to sustain the workforce population for each municipality, given historical trends of out-migration. Low, medium, and high growth scenarios are benchmarked by integrating different attrition rates with the requisite migration. For this model, values of 50% for low, 70% for medium, and 100% for high are assigned as constants for the attrition factor. It important to note that a decrease in the number of required workers may be linked to a combination of increasing productivity through automation and/or the hiring of currently unemployed people and this scenario can be implemented within the structure of the model.

2.1 Torbay Demography

The 2016 population of Torbay, based on individual age counts, was 7,875. Figure 2 displays the 2016 age structure for Torbay and it represents several trends:

- There is a low fertility rate as denoted by the narrow base especially in the 0-4 to the 10-14 age cohorts, when compared to the middle-aged cohorts.

- There is a notable lack of younger adults in 20-24 to 30-34 age cohorts.

- There is a concentration of working-aged people aged 25-49.

- The concentration of middle cohorts and lack of younger cohorts can be partly accounted for the post-secondary institutions and their student population who declared St. John's as a home during the 2016 Census. When they establish families there is a trend for those people to move outside the city to the suburbs.

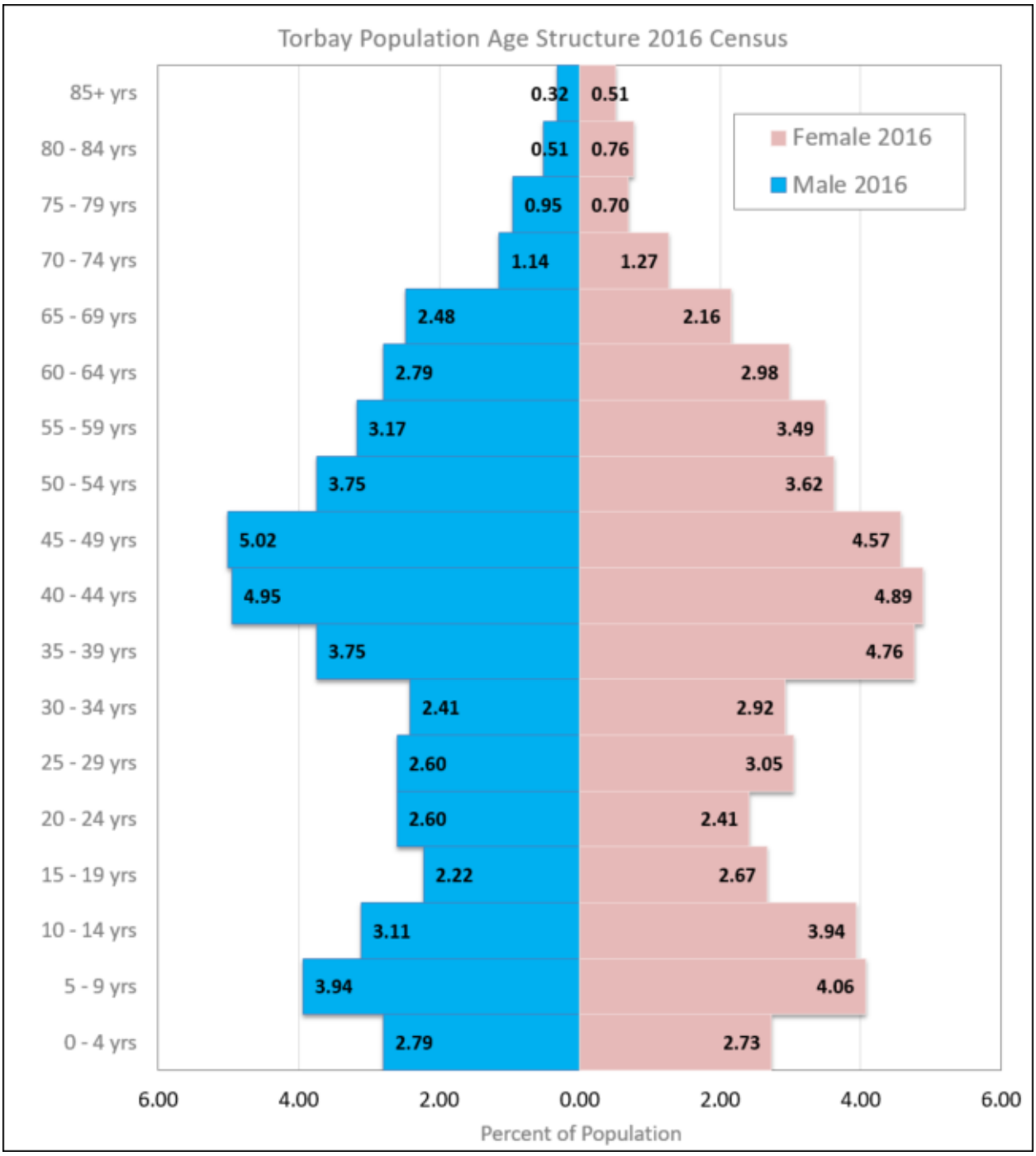

Figure 2: Town of Torbay 2016 Population Age Structure

When comparing sections of the age structure for Torbay (Figure 2):

- The 0 to 19 age cohort accounts for 25.5% of the population, 20 to 39 cohort 24.5%, 40 to 64 cohort 39.2% and the 65+ cohort 10.8%. For example, this age distribution has long term consequences where if a chained process is assumed along with no in-migration and the 0-19 cohort replaces the 20-39 cohort there would be a 1.0% surplus.

Preliminary results from the no migration population models suggests that there are potential population sustainability issues in terms of fertility rates, which averaged 1.44 between 2011 and 2016 (e.g. model includes both birth and death rates).

The no migration scenario, which only utilizes the potential for births and deaths or the ability of an existing population to naturally sustain its numbers without any in or out migration estimated that from 2016 to 2035 the population would decrease by 251.

The no migration scenario above highlights the issue with low fertility rates and a somewhat ageing population. When comparing the 2016 age structure of Torbay with an ideal low growth population model (Figure 3) the shortfalls in population growth become more apparent. The following trends are evident when comparing the 2016 observed census with an ideal low growth population model for Torbay:

- For the population to sustain itself the existing age structure in the 0-4 to the 15-19 age cohorts must equal the ideal population growth model. In this case there is a marginal 0.3% shortfall in the 2016 age cohorts.

- Given that St. John's is the regional centre for post-secondary institutions as well as a place that provides above average opportunities for young workers there are 4.1% fewer people in this cohort in Torbay than expected.

- In the 30-34 to the 45-49 age cohorts the higher than expected concentration in this group is what is expected with an attractive suburban town in a region with an ageing workforce (e.g. 8.1% more).

- The somewhat higher concentrations in the 50-54 to the 60-64 age cohorts with 2.3% more than expected and is typical of an ageing workforce.

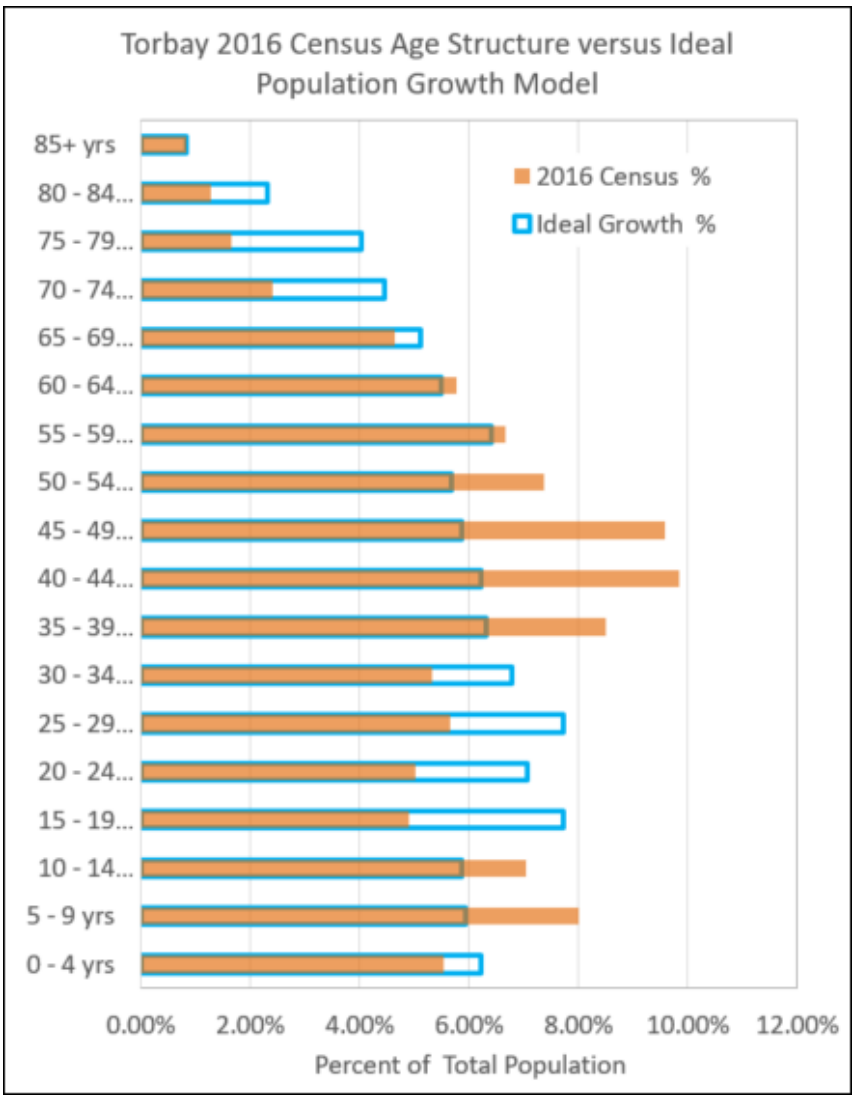

Figure 3: Torbay 2016 Statistics Canada Census versus Ideal Low Growth Population Model Age Structure

2.2 Population Models[5] and Migration Factor

When historical fertility and mortality trends are included in the population model along with migration that reflects the "boom and bust" years in the economy the population, FROM 2016 TO 2035 would increase by 1,349. This scenario becomes somewhat problematic because if an economy expanded during the boom cycle and the population and workforce remained somewhat stable or slightly declined during a downturn or no growth period there may be excess capacity in the workforce and the number of new jobs created in a future boom period may not be at the same level as past events of growth.

[5] The population model outcomes are presented in section 2.3.

Another factor that contributes to this trend is that in some instances automation in some sectors of the economy reduces the labour requirements but requires higher skilled workers. A more pragmatic approach would be to use a targeted migration model where, for example, 70% of the retirees are replaced along with a youth retention strategy. The estimates produced by this model would realize a net population increase of 70. This strategy is viable for areas like Torbay, because of the amenities and opportunities that are generally associated with urban regions but is more challenging for rural remote communities. The consequences associated with population age structures as related to occupations and industries are discussed later in the report.

The results of the 3 different population models, using their assumptions about births, deaths, and migration, estimate that by 2035 the population of Torbay could vary from a low of 7,624 for the no migration model (represents a decrease in population) to a high of 9,224 for the historical model. The targeted migration model estimates the population to increase to 7,945. The higher than usual values for the historical model is a reflection of the high levels of in-migration experienced in Torbay over the past few decades.

The no migration model result is not a realistic outcome but rather reinforces the fact that the town is comparable to many modern urban areas, because of low fertility rates, depend on in-migration to sustain and grow its population.

For the population to grow in Torbay as well as the CMA overall regional in-migration is the only option for growth. The best available migration data is at the St. John's CMA geography and the data contains the components of population growth and are presented in Table 1 and Figure 4.

The most prominent feature in the net migration data is that intra-provincial migration has been the major driver of growth in the St. John's CMA and this growth is distributed over the municipalities within the CMA. However, immigration was higher in 2015/2016 with 1056 migrants while the total for intra-provincial migration accounted for 795 migrants. For 2016/2017 intra-provincial migration (1279) was almost twice that of immigration (693). During this period there were net negative inter-provincial migration events starting in 2014/2015 where the net loss was -106 this increased to -1277 in 2016/2017 and by 2018/2019 this increased to -2600 (see Table 1 and Figure 4).

From a migration perspective these inter-provincial losses were offset by gains in immigration and intra-provincial migration. Note that from 2016/2017 to 2018/2019 intra provincial migration decline from 1279 to 871, respectively. Historically, intra-provincial migration has been a significant contributor to population growth in the CMA municipalities and with the continued decline in rural populations in Newfoundland and Labrador this source of migrants is expected to decline in the future thus population growth through migration will have to dependency more of immigrants and inter-provincial migration.

Table 1: St. John's CMA Components of Population Growth 2006/2007 to 2018/2019[6][7]

Refrence Year	Births	Deaths	Immigrants	Net interprovincial migration	Net intraprovincial migration	Net non-permanent residents	Net temporary emigration	Net Emigration	Total Growth
2006	1904	-1437	396	-774	1264	99	89	-34	1507
2007	1998	-1422	465	64	1412	44	101	-84	2578
2008	2184	-1348	442	570	1273	302	93	-83	3433
2009	2183	-1392	513	775	1208	433	88	-11	3797
2010	2132	-1435	534	284	1207	330	87	-44	3095
2011	2000	-1421	498	338	988	607	99	-33	3076
2012	2012	-1477	478	404	1004	335	113	-204	2665
2013	2181	-1473	627	125	985	421	113	-65	2914
2014	2095	-1631	508	-106	802	186	96	-74	1876
2015	2114	-1567	1056	-347	795	704	103	-153	2705
2016	2066	-1604	693	-1277	1279	342	108	-153	1454
2017	1916	-1624	876	-1771	910	211	96	-115	499
2018	1870	-1670	1135	-2600	871	490	97	-114	79

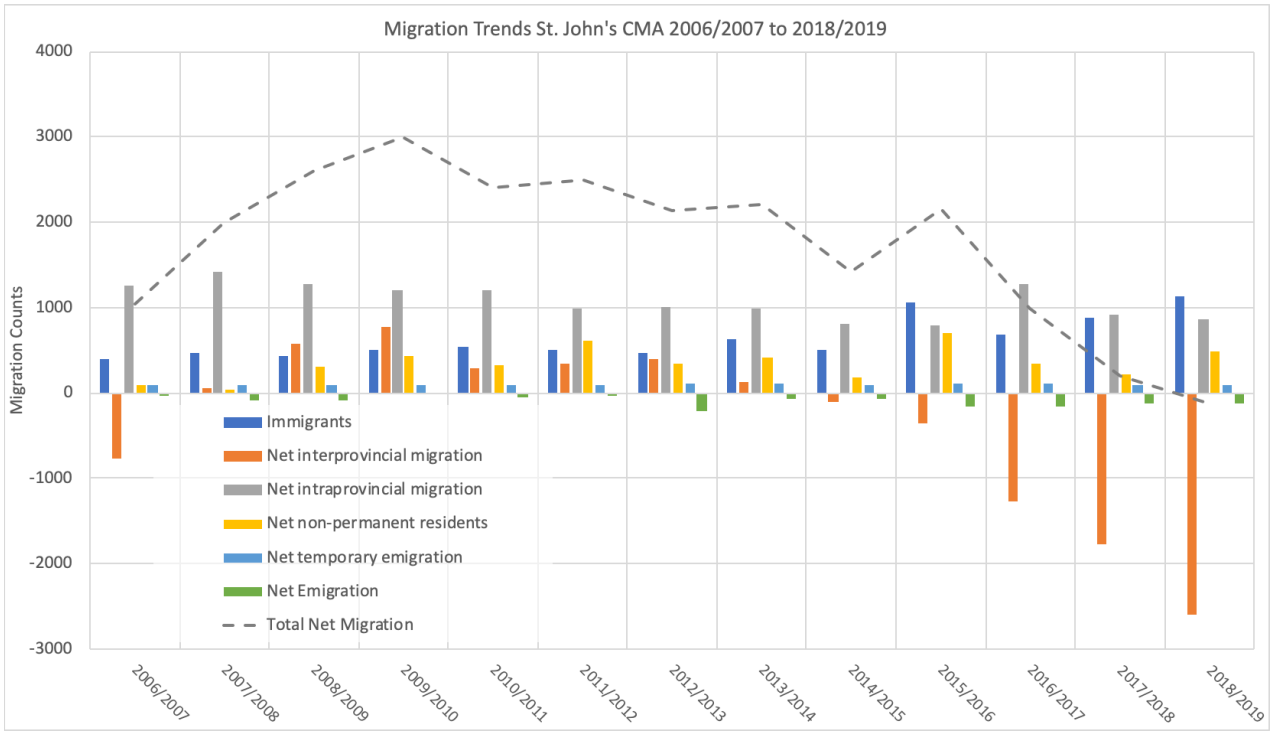

Figure 4: St. John's CMA Migration Trends 2006/2007 to 2018/2019

[6] Source: Statistics Canada Table: 17-10-0136-01

[7] Net emigration = Returning Emigrants - Emigrants

When examining the total net migration trend in Figure 4 there are 3 visible trends of population growth linked to migration:

(1) Significant growth from 2007/2008 to 2009/2010
- Immigrant gains ranged from a low of 413 to a high of 513
- Net Inter-provincial migration gains ranged from a low of 64 to a high of 775
- Net Intra-provincial migration gains ranged from a low of 1207 to a high of 1412

(2) A slight decline from 2009/2010 to 2015/2016
- Immigrants gains ranged from low of 478 to a high of 1056
- Inter-provincial migration loss ranged from a low of -375 to a high of 775
- Intra-Provincial migration gains ranged from low of 795 to a high of 1208

(3) A rapid decline from 2015/2016 to 2018/2019
- Immigrants gains ranged from a low of 693 to a high of 1135
- Inter-provincial migrations losses from a low of -2600 to a high of -347
- Intra-Provincial Migration gains ranged from a low of 795 to a high of 1279

The preceding trends and range of values in each sub-trend highlights the high degree of volatility in migration trends that is driven by out-migration from rural areas of the province as well as growth and decline in the largely influential resource sector in the region. Down turns in the economy are evident in the relatively high number of net negative inter-provincial migration. Of concern here is the volatility in both the inter- and intra-provincial migration patterns while there are sporadic increases in immigration it is also somewhat volatile. To ensure stable population growth a population growth or development strategy is required.

Given the number of births versus deaths within the CMA natural population growth through births alone will not be a factor in sustaining future population growth. For example, in 2016/2017 there were 2066 births and 1604 deaths thus the net growth from these two components was 462 and by 2018/2019 this was reduced to a net growth of 200 (Table 1). Thus, births are remaining relatively stable or declining while deaths are increasing because of the ageing factor within the population.

If historic trends continue until 2035 the estimated average age will be 42.8 years an increase of 2.2 years from 2016 (40.6 years). According to the model if historic trends continue deaths (1455) will exceed births (996) by 2035. The targeted migration model offers quite different scenarios where the average age is estimated to be 41.2 an increase of only 0.6 years over the forecast time. Furthermore, birth (1,477) slightly exceed deaths (1,456).

A review of the data in Table 1 indicates that immigration, inter-provincial and intra-migration are the important migration factors that influence population growth within the St. John's CMA[8]. A review of the age cohorts associated with these three migration components will provide insight to the age structure of the migrants. Figure 4 displays the three important migration components that contribute to potential growth in the St. John's CMA for 2016/2017. Net non-permanent residents are also included because in many cases they represent students that attend post-secondary institutions in the region especially in the 15-19 and the 20-24 age cohorts. The age cohort migration trends can be summarized as follows:

- For immigrants youth and young adults dominate with 485 of the total 693 immigrants arriving during this period and range in age from 0-4 to 30-34 years

- In the case of net interprovincial migration 785 of 1277 people who left the province were between the ages of 20 to 24 and 40-44. Out of this group 559 where in the 20-24 and 30-34 age cohort.

- For intra provincial migration 1117 of 1279 migrants were aged between 15-19 to 40-44. However, 734 were in the 15-19 to 20-24 cohorts.

- Net non-permanent residents migration is dominated by the 15-19 and 20-24 age cohorts with 509 came to the region in the 2016/2017 period. For the most part this is potentially related to the post-secondary institutions in the region.

- For retirees the migration factor is not significant but during the period only 65 aged 65+ moved from other regions of the province to the CMA while 105 left for other provinces.

For the 20-24 to the 40-44 age cohorts the inter and intra provincial migration patterns can be attributed to both upturns and downturns in the region's economy but also linked to opportunities for both education and employment within the CMA. **However, the pattern of migration by age cohort displayed in Figure 5 represents a period of uncertainty as well as a downturn in the CMA's economy. In situations of economic growth, the inter-provincial migration patterns are reversed as evident in the positive net migration in 2008/2009 and 2009/2010 (Figure 4). These temporal trends produce uncertainty in the population model (e.g. historical migration model) whereby estimates for the future will vary by age cohort. For example, in the current historical model the 0-4 to 60-64 age cohorts have on average a ±7% uncertainty while the 65+ cohort has a ±2% uncertainty.**

[8] The authors recognize that net non-permanent residents and net temporary residents do add to the population and contribute to the economy but their temporary status may not contribute significantly to future population growth unless they become permanent residents.

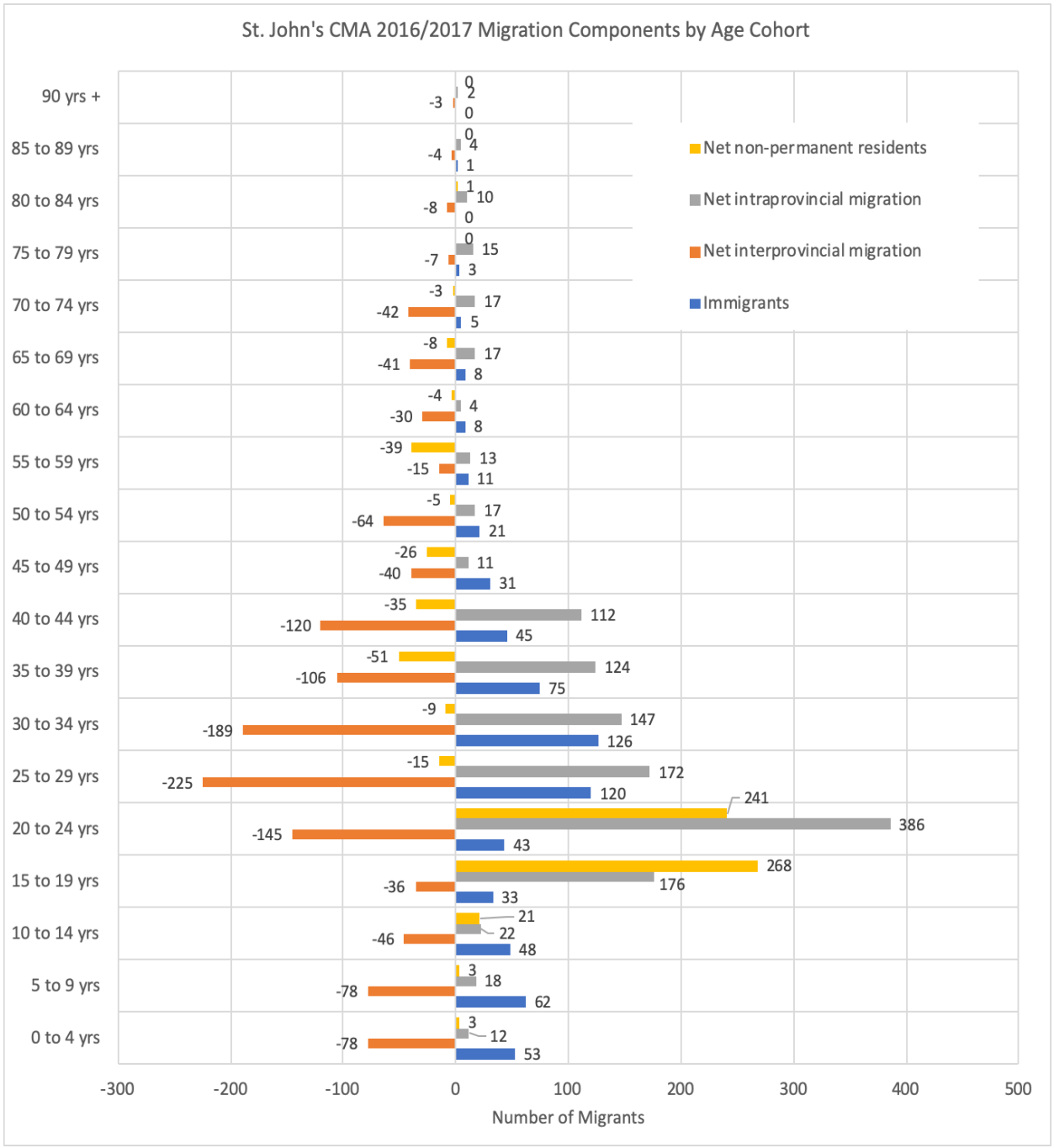

Figure 5: St. John's CMA 2016/2017 Migration Trends by Age Cohort

2.3 Historic and Targeted Population Model Results

The historic model estimates the total population for Torbay will increase from 7,875 in 2016 to 9,224 in 2035 or an increase of 1,349. This projection is constrained by the assumptions that fertility, mortality rates, and migration patterns will continue over the forecast period. The age distribution in projected 2035 population indicates that there will be more seniors than in 2016 (Figure 6). The age structure of the 2035 population pyramid displayed in Figure 6 is one that represents an ageing population with an increasing proportion of the population in the 65+ age cohort. The most notable changes in the 2035 age structure is:

- As a proportion of the population there is a 17.8% decrease in the 0-4 and 15-19 age cohorts. This decline is associated with lower-than-replacement fertility rates.

- Attracting younger workers or retaining them does not guarantee long term sustainability or growth of the population because of low fertility rates amongst younger adults and in-migration will be the main driver for population growth.

- The historic model 2035 projected increase for the 70+ age cohort is 17.1%.

- It is projected that by 2035 the 0-19 and 65+ age cohorts will represent 17.8% and 19.8% of the population respectively and supports the ageing factor in the population.

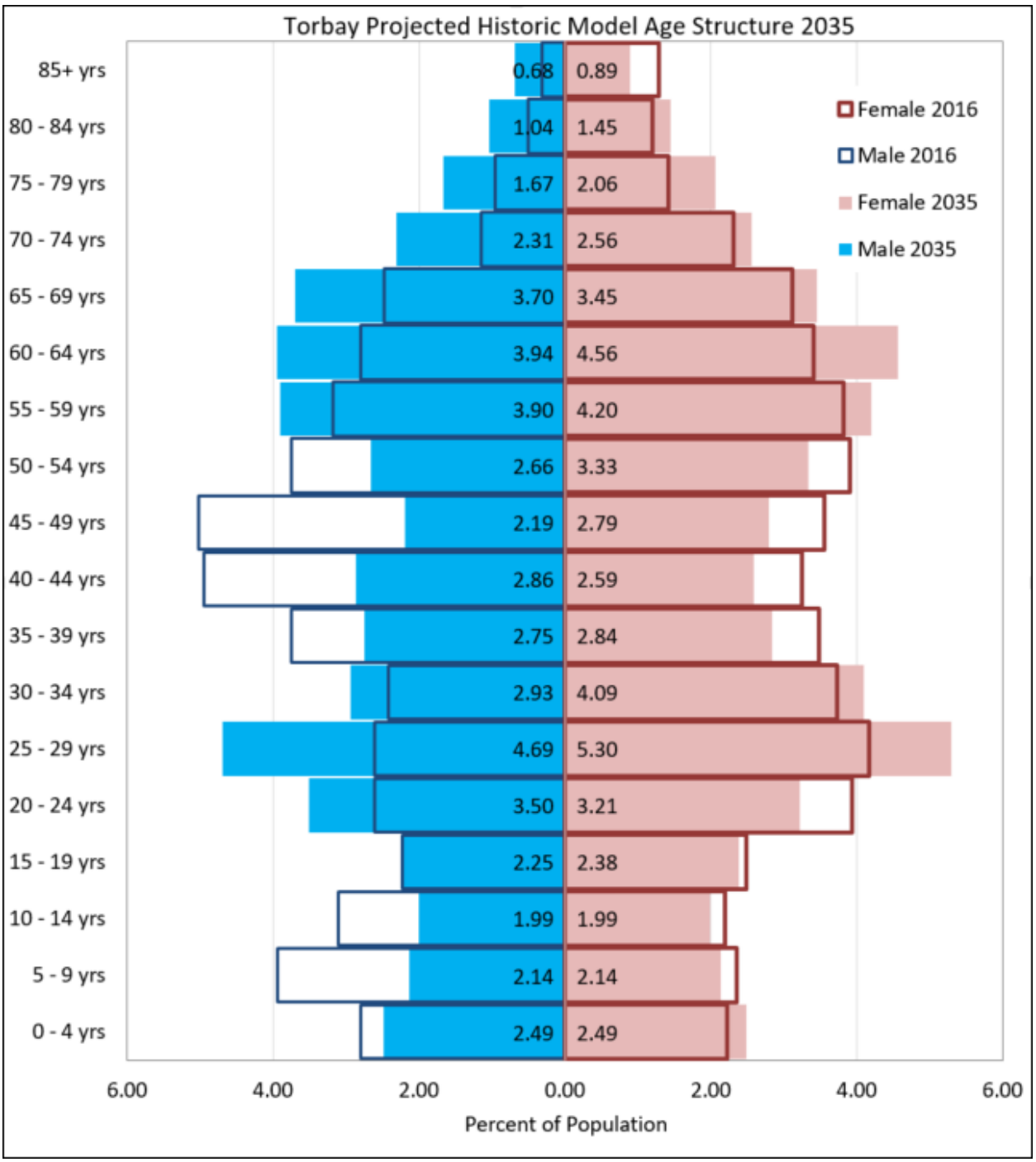

Figure 6: Torbay Historic Model Predicted 2035 Age Structure versus 2016 Census

The discussion on the age structure focused on what proportion of the population is within a specified age cohort and the overall distribution of age with a population. To understand the potential magnitude of change and impacts posed by an ageing and growing population one must examine the absolute or percentage change in the population.

Table 2 presents a comparison between the observed population in 2016 and the projected 2035 changes by age cohort estimated by the historic and targeted migration models. The historic model integrates 20 years of migration trends by age and reflects the impacts of cyclic upturns and downturns in the economy while the targeted migration model is based on a scenario where 70% of the retirees are replace by younger workers. The outcomes presented in Table 2 can be summarized as follows:

- The historic model estimates that the population will increase from 7,875 in 2016 to 9,224 by 2035 or an increase of 17.1%

- The targeted migration model indicates that the population will increase from 7,875 in 2016 to 7,945 or a 0.8% increase.

- From 2016 to 2035 the historic model estimates that youth aged 0-4 to 15-19 will decrease by 357. These cohorts are highly dependent upon fertility rates and the mobility of their parents.

- According to the target migration model and if 70% of the retirees are replaced by younger workers there would be an estimated net loss of 28 in the 15-19 cohort but a net gain of 392 in the 20-24 through 30-34 age cohorts. The net loss in the 15-19 cohort can be linked to diminishing intra-provincial migration as well as decreases cause by low fertility rates provincially and in the town.

- For age cohort 65+ both the historic and targeted migration model produced similar estimates where the historic model estimated an increase from 850 in 2016 to 1,828 in 2035 or a 115% increase while the target model estimated the 65+ population to be 1,812 or a 113% increase.

- Because of temporal migration variations on average there is a $\pm$7% uncertainty in estimates associated with cohorts less than 65 years and only $\pm$2% for cohorts 65+. Thus, the estimates for retirees are stable across all population models.

Table 2: Torbay Projected Population and Changes by Age Cohort From 2016 to 2035

Age Cohort	Census 2016	Historic Model 2035 Projection	Target Model 2035 Projection	Historic Change 2016-2035	Target Change 2016-2035
0 - 4 yrs	435	458	377	23	-58
5 - 9 yrs	630	394	334	-236	-296
10 - 14 yrs	555	368	323	-187	-232
15 - 19 yrs	385	427	357	42	-28
20 - 24 yrs	395	619	459	224	64
25 - 29 yrs	445	921	688	476	243
30 - 34 yrs	420	648	505	228	85
35 - 39 yrs	670	515	418	-155	-252
40 - 44 yrs	775	503	425	-272	-350
45 - 49 yrs	755	460	388	-295	-367
50 - 54 yrs	580	553	467	-27	-113
55 - 59 yrs	525	747	662	222	137
60 - 64 yrs	455	784	731	329	276
65 - 69 yrs	365	659	634	294	269
70 - 74 yrs	190	450	444	260	254
75 - 79 yrs	130	344	351	214	221
80 - 84 yrs	100	230	236	130	136
85+ yrs	65	145	147	80	82
Total	**7,875**	**9,224**	**7,945**	**1,349**	**70**

Note: The colour scale in the table is column specific such that it visually permits comparison between outcomes where dark blue represent lower values, white intermediate and dark red the highest values.

Given that the total individual age population for 2016 was 7,875 the population for 2035 could be slightly less than that number or range from 7,875 to an upper value of 9,224. More likely the actual value is somewhere between these two values.

If the economy remains stable or grows then one could expect a corresponding population growth. However, the projections produced by the historical and targeted migration models are somewhat volatile especially in the younger age cohorts (e.g. 20-24 to 35 to 39 cohorts) and in-migration is required to grow or sustain the current population level. This volatility associated is associated with economic growth as well as any retiree replacement policies**.**

Employment opportunities related to future economic growth will also depend on productivity gains through automation factors in specific industries as well as efficiencies gained through other downsizing strategies and out-sourcing some aspects related to operations. These factors may result in fewer newer jobs as well as lower replacements for retiring workers.

However, technology changes in some sectors of the economy may reduce the replacement requirements (e.g. from 100% to 70% or lower)

It is important to remember the population models are estimates and that assumptions about a population's behaviour will hold for the forecasted time-period. It is recommended that the models be re-calibrated and run after each new census period. Overall the outcomes are also dependent on:

- an economy that continues to grow or at least remain stable,
- the ability of the town to attract and retain workers younger than 40 years of age,
- the impact of automation in various sectors of the economy and the potential for fewer workers to maintain or increase productivity.

One common theme throughout the population model outcomes is that regardless of the models used to predict the population of Torbay will age and deaths will increase because of the number of older cohorts in the current population.

The outcome from the demographic analysis where the results from the historic and targeted migration models are similar whereby the estimated population of seniors aged 65+ will increase by 115% and 113% respectively. These results would suggest that regardless of the uncertainty that it is associated with the younger cohorts the ageing factor in Torbay population between 2016 and 2035 must be monitored in terms of demands for services as well as consumers. For example, young seniors (e.g. age 65-69 to 70-74) who have private pension plans are generally economically influential, tend to have higher levels of income, savings, expenditures and are more active politically. Previous, Statistics Canada studies have indicated that retirees consumption is on average 95% of their spending patterns in their 40's while their incomes level to about 84%[9]. This will be discussed further in the following sections.

2.4 Dependency Ratio

Statistics Canada defines the demographic dependency ratio as a measure of the size of the dependent population in relation to the working age population who theoretically provide social and economic support. The dependent age groups are: [i] youth 0 to 19 years and [ii] retirees 65+ years. The ratio is expressed as the "number of youth or retirees" for every 100 workers aged 20 to 64 years.

Changes in the ratios highlight changes in the age composition of the population. In cases where the senior ratio is greater than the youth ratio the population is ageing.

The dependency ratio is based on age rather than employment status. It does not account for young people or seniors who are working nor for working age people (aged 19 to 64 years) who

[9] Statistics Canada Catalogue no. 75-001-X: Consumption patterns among ageing Canadians, 2011

are unemployed or not in the labour force. The ratio only reflects the population age structure and is not meant to diminish people classified as dependents.

A sizeable ratio is an important indicator because the number of seniors 65 or older as well as children and youth younger than 20 are likely to be economically dependent on working age people and will put additional demands on public services such as schools and health care.

In 2016 the total dependency ratio for Torbay is 57 (youth + seniors) indicates that for every 100 workers there are 57 dependents (Table 3). The value for Canada in 2016 was 48.24. When this value exceeds 60+ it is considered high and there will be increase demand as well pressure on resources to provide services for the dependents. The problem arises when there are relatively high numbers for both youth and senior dependents whereby services and resources are required for both cohorts. When the value for seniors exceed youth values there will be more demand for those services and the current workforce will be expected to contribute through taxes etc. to support these services. For example, in 2016 there were more youth dependents (40) than seniors (17) (Table 3). While this is a sizeable difference, it depends on youth retention and the margin needs to be higher for a more stable workforce in the future.

The best strategy for population growth/sustainability is to develop policies to retain younger workers and attract migrants to fill the shortfalls attributed to low fertility in the population.

By 2035 the historic model estimates that the total dependency value is 60 or 60 dependents for every 100 workers. In this scenario seniors with a value of 32 is slightly higher than youth with a score of 29. In this case the system has increasing pressure because of nearly equal demands for both cohorts. For the targeted model outcomes seniors with a value of 38 is still higher than youth with a value of 29 for a total score of 68 which is still considered high (Table 3).

Both population models estimate that the dependency ratio will be 60+ and this is considered high and is symptomatic of an ageing population and given that in both scenarios there is less difference between youth and senior dependency ratios than present indicates increasing pressure on resources to provide services for both age groups.

Table 3: Torbay Observed versus Predicted Demographic Changes (2016 to 2035)

Population Model	Est. Population	Average Age	Births	Deaths	Youth (<20) Dependency Ratio	Seniors (65+) Dependency Ratio	Total Dependency Ratio
2016 Census Year (Observed)	7,875	37.6	74	49	40	17	57
Historic Cycles (2035)	9,224	42.4	106	98	29	32	60
No Migration (2035)	7,624	45.3	78	103	25	39	64
Targeted Migration (2035)	7,945	44.1	82	97	29	38	68

Note: The colour scheme in the table represents the low and high value range for each column where dark blue represents the lowest values, white intermediate and dark red represents the highest values.

3.0 Regional Connectedness

Connectivity between places refers to the degree to which places are connected in terms of people (e.g. commuters), goods/commodities and services. A municipality's role in a regional economy is generally revealed by examining worker commuting patterns as well as supply chain flows or value transactions/ linkages of commodity flows amongst industries. This includes goods and services associated with retail and public sector industries.

Statistics Canada 2016 journey to work data provides information on commuting patterns while RAnLab's geo-spatial supply chain model generates the local value linkages between industries. ***The supply chain represents the value linkages (network) between industries and their suppliers required to produce and distribute products to another industry or consumer. Participants in a supply chain include producers, vendors, warehouses (transhipment), transportation, distribution centres and retailers.***

Table 4 (A&B) contain the counts and percent flows for commuters between the six participating municipalities. Note the "External" class includes all other municipalities, other places in the provinces as well as inter provincial commuters (e.g. Alberta, Ontario, Quebec). Of the estimated 3,305 commuters originating in Torbay 7.26% of the workers commute to work within the boundaries of the town, 81.39% go to St. John's, 7.26% go to Mount Pearl, 3.03% have an external destination and 1.06% go to Paradise.

Flows less than 1% are associated with commutes to Conception Bay South and Portugal Cove-St. Philip's. Of note is the high percentage value associated with St. John's as a destination from Torbay. **Of the 3,305 commuters originating from Torbay 81.39% commute to St. John's for work, which represents the highest proportion in the region**. **St. John's is a core destination for journey to work flows and reflects its Statistics Canada status as an urban centre and proximity to these types of centres generates growth within the region.** It is important that on a regional bases these highly connected municipalities foster a regional collaboration that can not only benefit a municipality but also the entire region.

An outcome of workers commuting to another community to work is an increase in the daytime population in the destination and a decrease in the origin. Net daytime population is defined as the ***population of a place plus the in-commuters minus the out-commuters.*** Table 2 presents the daytime population of the six participating municipalities along with the percent change from the actual total population of a place.

Due to high (in) commuting and low out commuting, St. John's has a daytime population of 132,230 and this represents an increase of 21.88% (Table 5). This increase represents significant opportunities for businesses focused on consumer services (e.g. restaurants, retail etc.). Mount Pearl's daytime population increases by 3.09%. The population of Conception Bay South, Paradise, Portugal Cove-St. Philip's and Torbay decrease from a minimum of 28.68% to a maximum of 34.60%. These declines represent a significant daily reduction in population and

may impact some businesses. However, the return commute offers intervening opportunities and generally businesses are located to take advantage of these commuters. Of note is that Torbay currently has the largest estimated impact of the three negative municipalities.

Table 4 A & B: Regional Commuting Count and Percent Flows

(A) From	Count of Commute Flows To							
	Conception Bay South	External	Mount Pearl	Paradise	Portugal Cove-St. Philip's	St. John's	Torbay	Grand Total
Conception Bay South	2250	540	1455	535	20	5740	0	**10540**
External	110		600	45	0	6020	95	**6870**
Mount Pearl	60	180	2900	360	20	6515	0	**10035**
Paradise	285	465	1375	1130	45	6420	25	**9745**
Portugal Cove-St. Philip's	30	55	335	55	245	2400	25	**3145**
St. John's	345	1235	3720	830	115	38860	170	**45275**
Torbay	0	100	240	35	0	2690	240	**3305**
Grand Total	**3080**	**2575**	**10625**	**2990**	**445**	**68645**	**555**	**88915**

(B) From	% of Commute Flows To							
	Conception Bay South	External	Mount Pearl	Paradise	Portugal Cove-St. Philip's	St. John's	Torbay	Grand Total
Conception Bay South	21.35%	5.12%	13.80%	5.08%	0.19%	54.46%	0.00%	100.00%
External	1.60%	0.00%	8.73%	0.66%	0.00%	87.63%	1.38%	100.00%
Mount Pearl	0.60%	1.79%	28.90%	3.59%	0.20%	64.92%	0.00%	100.00%
Paradise	2.92%	4.77%	14.11%	11.60%	0.46%	65.88%	0.26%	100.00%
Portugal Cove-St. Philip's	0.95%	1.75%	10.65%	1.75%	7.79%	76.31%	0.79%	100.00%
St. John's	0.76%	2.73%	8.22%	1.83%	0.25%	85.83%	0.38%	100.00%
Torbay	0.00%	3.03%	7.26%	1.06%	0.00%	81.39%	7.26%	100.00%
Grand Total	**3.46%**	**2.90%**	**11.95%**	**3.36%**	**0.50%**	**77.20%**	**0.62%**	100.00%

Note: The colour scheme in the tables are used to highlight trends in data whereby dark blue would represent the lowest values, white intermediate and dark red the highest value

Table 5: Daytime Population Counts and Percent Change from Actual Population

Municipality	Day Time Population (Count)	% Difference Daytime vs. Total Population
St. John's	132230	21.88%
Mount Pearl	23545	3.09%
Conception Bay South	18740	-28.68%
Paradise	14635	-31.34%
Portugal Cove-St. Philip's	5445	-33.39%
Torbay	5150	-34.60%

The percent supply chain values presented in Table 6 represents to what degree do businesses located in one municipality buy/sell their products locally and to other communities in or outside the region. For the six municipalities the highest supply chain business to business transactions are within their own boundaries (57.31% to 75.19%) followed by linkages to St. John's and the External class. **In the case of Torbay 65.16% of supply chain value transactions occur between businesses within the town's boundaries. Value based transactions from Torbay businesses to other businesses in 4 of the other municipalities are less than 1.5% while there is a 20.72% supply chain flow from Torbay to St. John's and a 12.63% flow to places External to the region. The supply chain transactions from the other 5 municipalities to businesses in Torbay are all estimated to be less than or equal to 1%.**

For businesses External to the study area 1.13% of their transactions are with businesses in Torbay. Note that these percentages are based on totals and there can be a high degree of variability between businesses. For example, there may be instances where a business outside a town/region will only have 2% of its sales linked to another town/region while another may have 90% of its sales dependent on a business located in another region.

Table 6: Supply Chain Percent Total Commodity Value Flows

From	% Supply Chain Flows To							
	Conception Bay South	External	Mount Pearl	Paradise	Portugal Cove-St. Philip's	St. John's	Torbay	Row Total
Conception Bay South	69.75%	16.65%	0.36%	0.37%	0.11%	12.76%	0.00%	100.00%
External	3.71%	0.00%	8.99%	4.51%	1.36%	80.29%	1.13%	100.00%
Mount Pearl	0.66%	19.99%	60.37%	1.77%	0.16%	16.99%	0.06%	100.00%
Paradise	0.00%	9.44%	1.08%	65.67%	0.10%	23.70%	0.00%	100.00%
Portugal Cove-St. Philip's	0.90%	21.37%	0.00%	0.00%	57.31%	19.37%	1.04%	100.00%
St. John's	0.26%	23.46%	0.30%	0.44%	0.18%	75.19%	0.17%	100.00%
Torbay	0.00%	12.63%	0.00%	0.00%	1.49%	20.72%	65.16%	100.00%
Column Total	**3.00%**	**10.87%**	**7.91%**	**3.82%**	**1.07%**	**72.43%**	**0.90%**	100.00%

4.0 Torbay Economy

This section reviews the Torbay economy and the impact of its industries along with the explanation of the metrics used to indicate the impacts. Specifically, dollar value and employment related direct and indirect multipliers, the number of businesses in each sector as percent of small-medium size industries. These metrics are augmented by location quotients (LQ) that measure the concentration (e.g. comparative advantage, export versus local demand etc.) of industries within the town. To add context to the state of the economy industry growth trends and volatility are presented. The overview of the economy is followed by a discussion on the labour market and occupation trends within the town. This will include:

[1] Projections by skill level
[2] Occupation average age
[3] Occupation replacement needs versus suitability of existing and migrant workers
[4] Unemployment rate by age and education
[5] Participation rate by age and education

Regional economic impact analyses provide a quantitative assessment through various metrics that can identify the benefits/importance that an industry has to the overall socio-economic well-being of a place and its neighbours. The total regional economic impact of an industry is linked to metrics associated with direct, indirect and induced impacts.

Direct spinoffs or 1st round effects are based on the initial impacts of operating (e.g. expenditures for labour, materials, supplies and capital) a specified industry or expanding production of an industry to meet demands.

Indirect spinoffs or 2nd round effects are associated with intermediate industries that provide goods and services as well as hiring workers to meet this demand to an industry.[10] These indirect effects cascade down the supply chain and create additional spinoffs where there are 3rd to nth round indirect effects whereby industries supply other industries in the supply chain to meet a demand at the top of the hierarchy.

The further an industry is down the indirect portion of supply chain the less impact it has on the local economy. In this case the top of the economic impact hierarchy is the industry that is identified in the supply chain as having a direct impact and the transactions between this industry and its required suppliers/services industries are indirect.

The final impacts to be considered are **induced** whereby employees associated with the supply chain for an industry use their income to purchase goods and services at the household level. In this study induced impacts are not directly calculated[11] but will be addressed in the section on consumer spending. In many cases if the wages are high in the direct and indirect impact industries the induced impact on the local economy may be significantly higher than the direct or indirect impacts.

Table 7 presents a list of the top 25 industries by total employment, direct and indirect employment, number of establishments and percent small and medium size enterprises (SMEs). For this information the number of direct and indirect jobs and the percent of employment in SMEs. In the top 6 employment industries all are in the private sector: construction (469), food

[10] Indirect effects are related to industries that provide goods and services to industries that are identified as direct industries. For example, if offshore oil extraction is considered the direct industry businesses that supply services and equipment for oil extraction would be considered indirect industries.

[11] RAnLab is developing a web application that will calculate the total impacts of an industry using direct, indirect and induced metrics

services and drinking places (143), and food and beverage stores (136) top the list. To understand the impact of industries on a regional economy direct and indirect employment provides insight to the spinoffs associated with a particular sector of the economy.

For example, for construction there are on average 469 employees associated with this sector. However, 299 are directly employed with construction companies while 170 (36.2%) are classed as indirect employment and linked to the spinoffs associated with the construction industries**. Out of the top 25 industries this is the highest gross indirect job spinoff and signifies the importance of this sector to the town's economy. For this sector, all 100% are employed in SME's with less than 200 employees (Table 7).**

In Torbay all of the enterprises in the top industries are SMEs. SMEs are somewhat volatile because they tend be to be more sensitive to downturns in the economy. Proportionally, construction has a lower indirect job spinoff factor than more intermediate sectors such as architectural and structural metals manufacturing. This is related to the fact that the outputs of construction businesses in many cases are final demand products whereby after a project is completed there is no further value added, by the customers of the construction sector, to the regional economy.

This is like other sectors that produce final demand products such as food services and drinking places that directly employs 127 workers but the indirect spinoff jobs are 16 or 11.5% of the total jobs linked to these industries. The direct versus indirect spinoff employment are the actual job multipliers. For example, if an industry has job multiplier of 2 and that industry employs 200 workers it will support an additional 100 jobs in the economy (Table 7).

Table 7: Torbay Top 25 Total (Direct + Indirect) Industry Employers

Industry	Est. Total (Direct + Indirect) Employment	Est. Direct Employment	Est. Indirect Employment	Number of Establishments	% Employment in Small & Medium Enterprises
Construction	469	299	170	93	100.0%
Food services and drinking places	143	127	16	7	100.0%
Food and beverage stores	136	121	16	8	100.0%
Lessors of real estate and financial investment services, funds and other financial vehicles	113	85	28	65	100.0%
Services to buildings and dwellings	108	94	14	12	100.0%
Ambulatory health care services	94	89	5	36	100.0%
Nursing and residential care facilities	69	57	13	5	100.0%
Architectural and structural metals manufacturing	65	35	31	1	100.0%
Elementary and secondary schools plus other educational services	65	47	18	6	100.0%
Architectural, engineering and related services	56	41	15	17	100.0%
Employment services and management, scientific and technical consulting services	47	41	6	18	100.0%
Local, municipal and regional public administration	44	35	10	1	100.0%
Gasoline stations	40	36	4	3	100.0%
Social assistance	39	38	1	14	100.0%
Truck transportation	33	26	7	8	100.0%
Fishing, hunting and trapping	33	28	6	26	100.0%
Personal care services and other personal services	28	24	4	9	100.0%
Amusement, recreation, performing arts, spectator sports and related industries, and heritage institutions	24	22	2	7	100.0%
Machinery, equipment and supplies merchant wholesalers	21	17	4	2	100.0%
Automotive repair and maintenance	17	16	2	5	100.0%
Traveller accommodation	17	16	2	2	100.0%
Health and personal care stores	17	15	3	1	100.0%
Offices of real estate agents and brokers and activities related to real estate	17	12	5	12	100.0%
Lessors of non-financial intangible assets (except copyrighted works)	15	7	8	1	100.0%
Accounting, tax preparation, bookkeeping and payroll services	14	13	1	5	100.0%

Local multipliers are generally used to estimate the value of the spinoffs, in terms of $ or jobs, for both direct and indirect parts of the regional economy. Multipliers essentially measure the spinoffs that an industry, through direct, indirect and induced impacts, has on a regional economy. From a dollar value perspective for every dollar spent by an industry it generates/spinoffs additional $ in the local and regional economy.

For example, for an industry every dollar spent in direct and indirect industries associated with a supply chain generates $2.5 in the local economy (or an additional value of $1.5). If the industries spend $5 million locally it will generate an additional $7.5 million for that economy for a total value of $12.5 million.

Dollar multipliers are impacted by the level of production of intermediate goods and services in a region versus the amount purchased through imports. If imports of commodities (intermediate goods) required for production are high in a region the full potential multiplier is not realized. For example, if a potential multiplier for an industry is $2.60 but 50% of the value of the inputs/goods required for production are imported then the local multiplier would be the total multiplier minus the value of imports in the supply chain and the local multiplier would only be $1.30 because of expenditures on imports.

Figure 7 presents the multipliers for the top 25[12] total employment industries in the town. The total dollar multiplier includes the local and external spinoffs. The external spinoffs are those goods and services (indirect) required by a specific industry (direct) to operate or produce goods for final demand or as an intermediate product for resale to another industry. These types of spinoffs provide no economic impact locally unless there are transportation, warehousing, or assembly provided by local enterprises. For example, the total multiplier for the construction sector is $1.57 but the local multiplier is $1.25.

[12] The database will include multipliers for sectors in the region's economy.

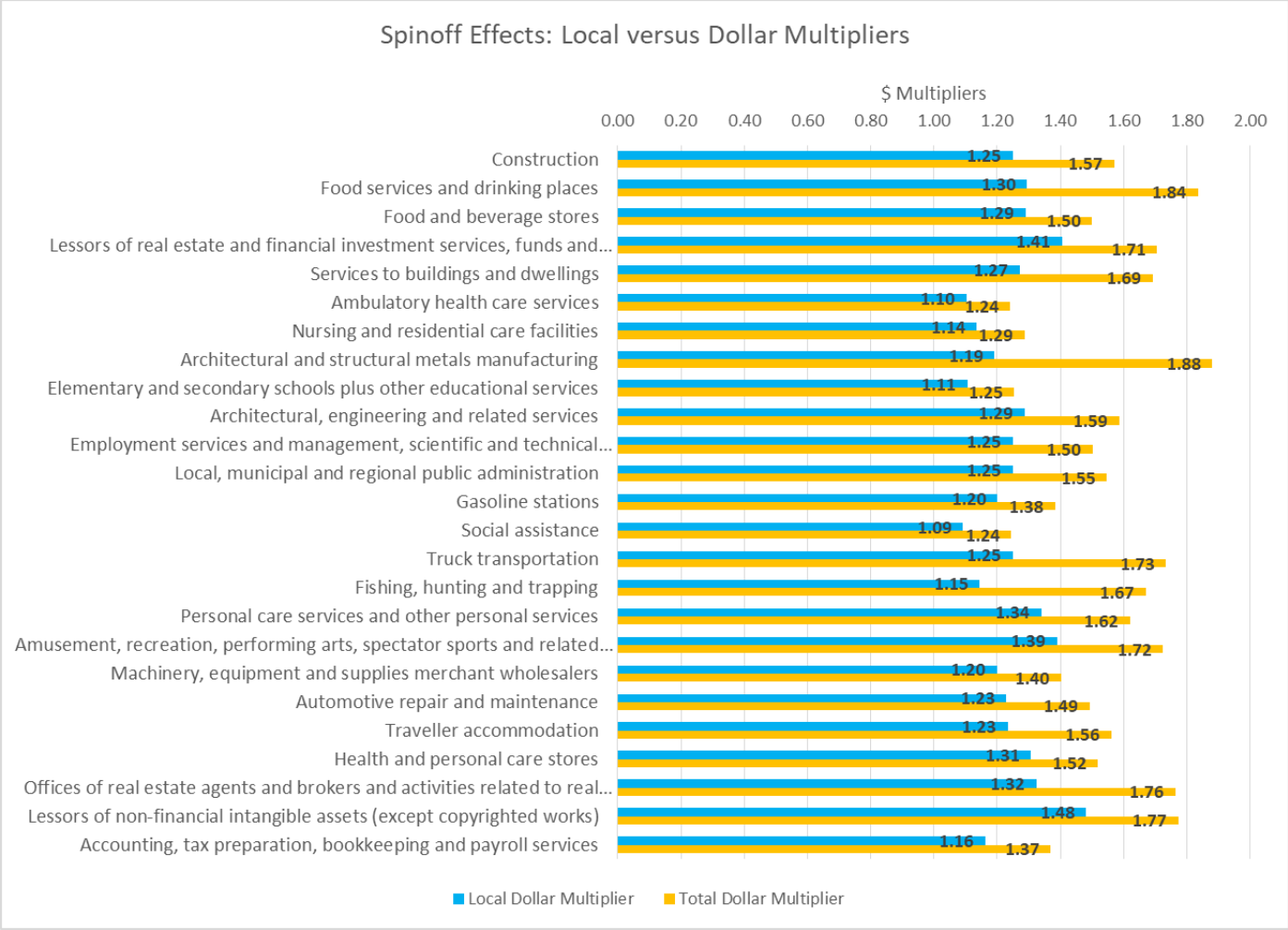

Figure 7: Torbay Spinoff Effects - Local versus Total Dollar Multipliers

For extraction type industries where the raw material is directly exported (e.g. oil and gas extraction exports 90% of its output) produces a high GDP per worker but the real impact is in the direct employment of workers as well as the associated spinoffs of additional jobs in businesses that supply this sector.

In the case of architectural and structural metals manufacturing approximately 22.3% of the total multiplier is realized locally and $0.69 is lost to the region's economy for every $ spent in purchased externally/outside the region by this sector. These economic leakages are generally the result of two factors:

- Locally, industries in the supply chain (indirect) do not have the capacity to meet the intermediate goods and service requirements for an industry's operations (direct) and the shortfalls are imported,

- Some of the goods/services required for operations/production are not produced locally and are imported

Both scenarios produce the same economic effect whereby the total $ economic multiplier is not realized within the region. Furthermore, there may be economies of scale related to the production of a good or service and it is not feasible to produce it locally and financially it is cheaper to import. In the case of architectural and structural metals manufacturing it is probably maximizing the local supply chain in terms of intermediate purchases of goods and services and given factors related to both capacity and economies of scale achieving 63% of the total $1.88 multiplier is optimal (e.g. it's probably not realistic to expect raw steel to be produced locally).

5.0 Comparative Advantage

Comparative advantage is based on the location quotient (LQ). The LQ is a ratio that compares employment for an industry in a town with that of the same industry in a larger region. In this case, it is a comparison of employment by industry in Torbay with same industries at the provincial level. ***This is a ratio where: employment in a town industry/ total employment in the town are divided by employment provincially in an industry/ total employment for the province.***

If the **LQ ratio is less than 1** employment in that industry is less than expected and there may be opportunities in this sector and it is currently serving a local demand. When **LQ = 1** the industry has average employment levels and is probably supplying a local demand for services or products, but when **LQ is greater than 1.25**[13] the town's industry has more employment than expected compared to the province. Thus, industries with high LQ values are typically export based and generally bring new money into the region. Note that there are some non-export based industries that will have a high LQ but will not be classed as export based but actually meets a high local demand. Those industries, within the town, that has a LQ value of 1.25 or greater indicates that the town has a comparative advantage, provincially, in those sectors.

Industries with high LQ (i.e. greater than 1.0) along with relatively high employment numbers are important to the regional economy, whereas industries with a high LQ and small employment numbers may be export based but not vital to the town's overall economy. In the case of regional economic development, tracking industries, over time, that have high

[13] Generally, when an industry has a calculated LQ value of greater than 1.0 and less than 1.25 it usually indicates that on average is meeting a local demand or potentially exporting. If LQ is greater than or equal to 1.25 it ranks higher in terms of local demands or exports.

employment factors as well as high LQ values provides insight to the well-being of a regional economy.

For example, if one of these industries' LQ values is decreasing overtime it will be an indicator of important industries declining which may have an adverse effect on the regional economy and should be monitored. Generally, if a region has industries with high LQ values they have a comparative advantage in those industries. In the context of this report industries with values of 1 or less are said to be supplying a local demand and those with higher values are deemed to be supplying a high local demand or is an export-based sector.

In Table 8 industries with LQs of 1.25 or higher are classed as "External Demand" depending on the industry it can be either export based or meeting a high local demand. For example, construction with an LQ value of 1.81 indicates that it is export based (External Demand) and for the town there is approximately 1.81 times more workers employed in this sector than for the entire province. It is expected to find high LQ values for construction in suburban towns as the land available for depots and yards etc. makes them more attractive locations than the centre city. In essence, then construction services are 'exported' from Torbay to St. John's (amongst other areas).

For nursing and residential care facilities the calculated LQ value is 2.01 and according to the threshold of 1.25 it is classed as having an external demand. This is where context is important, technically public services are not export based but the residential care facilities in the town services more than the local population thus its higher LQ value. In the case of many services if they service a larger population than that of the industry's location (e.g. Torbay) the LQ values will be higher. In many instances where public services or the service sector are located in a regional centre the LQ values will exceed one indicating the centralization of some services. Examples of this trend are construction (1.81) and ambulatory health care services (1.44), etc.

Generally, where LQ is greater than 1 and the associated employment is high indicates that that those sectors are important to the town's economy and should be tracked. However, if employment is relatively high and the location quotient is low, as indicated for the construction industry in the city of St. John's where it employs over 6,000 workers with a LQ value of 0.57, the sectors should be tracked because of their high employment and how they fit within the local supply chain. Any employment changes in these sectors may be a result of stressors in other parts of the economy.

Table 8: Industry Location Quotients for Top 25 Direct Employment Industries

Industry	Est. Direct Employment	Location Quotient	Comparative Advantage (LQ)
Construction	299	1.81	External Demand
Food services and drinking places	127	1.33	External Demand
Food and beverage stores	121	1.95	External Demand
Services to buildings and dwellings	94	6.10	External Demand
Ambulatory health care services	89	1.44	External Demand
Lessors of real estate and financial investment services, funds and other financial vehicles	85	1.86	External Demand
Nursing and residential care facilities	57	2.01	External Demand
Elementary and secondary schools plus other educational services	47	3.00	External Demand
Architectural, engineering and related services	41	1.78	External Demand
Employment services and management, scientific and technical consulting services	41	2.33	External Demand
Social assistance	38	0.99	Local Demand
Gasoline stations	36	2.01	External Demand
Architectural and structural metals manufacturing	35	22.24	External Demand
Local, municipal and regional public administration	35	1.19	Local Demand
Fishing, hunting and trapping	28	0.82	Local Demand
Truck transportation	26	1.87	External Demand
Personal care services and other personal services	24	1.82	External Demand
Amusement, recreation, performing arts, spectator sports and related industries, and heritage institutions	22	0.84	Local Demand
Machinery, equipment and supplies merchant wholesalers	17	1.41	External Demand
Automotive repair and maintenance	16	1.51	External Demand
Traveller accommodation	16	0.74	Local Demand
Health and personal care stores	15	0.70	Local Demand
Accounting, tax preparation, bookkeeping and payroll services	13	1.12	Local Demand
Private households	13	1.11	Local Demand
Offices of real estate agents and brokers and activities related to real estate	12	1.77	External Demand

Note: The colours in the Location Quotient column highlight the low and high values in the column where dark blue represents the lowest value, white intermediate values and dark red the highest values

In this study **shift-share analysis** is used to determine what portion of the town's economic growth or decline can be attributed to provincial, specific industry trends, and town/local factors. The analysis helps identify industries where the town's economy has competitive advantages over the larger economy. In this case shift-share analysis takes the change over time of an industry's employment variable, within industries of the town's economy, and divides that change into various components. Shift Share provides general information on competition and growth factors.

The outcomes for the working paper are classed as:

[1] Growth or net positive growth in employment from 2001 to 2018,

[2] Stable or zero growth for the time period and

[3] Stressed or net negative employment whereby employment through gains and losses resulted net job losses over the specified time period.

Included in the shift-share analysis is an **employment volatility index** for 2015 to 2018 which coincides with downturn in the oil sector. The purpose of this time frame is to measure the sensitivity of employment by industry to upturns and downturns in the economy. **The volatility index is a value that measures the variation in employment for a particular industry over a period of time. For example, employment in one industry can vary greatly in an employment**

cycle while another industry may exhibit a steady growth over the same period but may have the same net positive growth in employment at the end of the cycle. In this case for a selected industry if the variation is less than the mean trend the volatility is consider low, if values are greater than the mean and less than or equal to 2 standard deviations above the mean the volatility is considered moderate, variation in employment trends that are greater than 2 standard deviations above the mean trend volatility is considered high.

The shift-share results for 2001 to 2018 are presented in Tables 9, 10, 11 where results for each table focus on growth, stable and stressed outcomes respectively. In this case the three outcomes are related to the top 25 employment industries within the town. **The provincial growth trend refers to the industry growth trends across entire province while the local growth trend is linked to industry growth in the town.** When the local industry trend indicates growth and the provincial trend is stable or stressed local growth in an industry is due to the economic conditions/factors within the town related to some local comparative advantage. If the "local trend is stressed or stable" and the "provincial trend is growth", locally there are economic factors that are preventing local industries from benefitting from provincial trends.

These discrepancies in growth may be related to the type of industries that are growing. For example, if the city has an oil centric economy and over time there are major projects not related to the oil sector occurring outside the city, industries such as construction in other parts of the province may benefit. However, this trend may produce growth provincially for construction while a downturn in the oil and gas sector will result in a decline for oil centric construction industries unless they can adapt to take advantage of opportunities in other locations throughout the province. This pattern is evident in Table 10 whereby the construction industry exhibited growth provincially but remained stable (zero growth) in the town over the 18 year period. The net growth provincially is likely related to major projects such as Long-Harbour nickel plant, Bull Arm platform construction and the Muskrat Falls hydro project while in the oil sector much of the construction growth was related to the initial oil boom but the recent downturn in the oil sector may have offset any gains whereby the long outcome on average is stable which no net gain in employment.

Table 9 includes 18 of the top 25 employment industries that displayed growth locally (in the town) from 2001 to 2018. Food services, food and beverage stores, services to buildings, ambulatory health care, and lessors of real estate, amongst others, exhibited growth at the provincial and local level over the period.

Table 9: Torbay Shift-Share Analysis Outcomes by Industries Showing Local Growth from 2001 to 2018

Industry (Numbers in brackets = employment rank)	2018 Est. Employment	Prov. Growth Trend (2001 - 2018)	Local Growth Trend (2001 - 2018)	Employment Volatility (2013-2018)
Food services and drinking places (2)	127	Growing	Growing	Moderate
Food and beverage stores (3)	121	Growing	Growing	Low
Services to buildings and dwellings (4)	94	Growing	Growing	Low
Ambulatory health care services (5)	89	Growing	Growing	Low
Lessors of real estate and financial investment services, funds and other financial vehicles (6)	85	Growing	Growing	Low
Nursing and residential care facilities (7)	57	Stressed	Growing	Low
Elementary and secondary schools plus other educational services (8)	47	Stressed	Growing	High
Architectural, engineering and related services (9)	41	Growing	Growing	Low
Employment services and management, scientific and technical consulting services (10)	41	Growing	Growing	Low
Gasoline stations (12)	36	Growing	Growing	High
Local, municipal and regional public administration (14)	35	Growing	Growing	Low
Fishing, hunting and trapping (15)	28	Growing	Growing	Low
Truck transportation (16)	26	Stable	Growing	Moderate
Amusement, recreation, performing arts, spectator sports and related industries, and heritage institutions (18)	22	Growing	Growing	Low
Machinery, equipment and supplies merchant wholesalers (19)	17	Stable	Growing	Low
Automotive repair and maintenance (21)	16	Stable	Growing	Moderate
Private households (23)	13	Stressed	Growing	Low
Offices of real estate agents and brokers and activities related to real estate (25)	12	Stressed	Growing	Moderate

Note: Average employment number in Table 8, 9 and 10 are for the town.

However, nursing and residential care facilities were stressed provincially but grew within the town of the same time period. Local growth in government services may be related to regional growth or centralization of services. For example, the employment stress associated with elementary and secondary schools is likely related to declining and ageing populations in many of the rural areas in the province while the city has a higher demand for those services.
Note that for most industries that exhibited growth in Torbay from 2001 to 2018 the estimated average employment volatility was considered low. Those with moderate or high volatility are generally tied to the rapid population growth experienced in the town over the period. **Note that many growing and stable industries have specialized high skilled workers.**

Table 10 includes 3 of the top 25 employment industries that were classed as stable or net zero growth locally (in the town) from 2001 to 2018. Again, this does not mean that there was no growth during the specified time period but rather the job gains and losses over the period resulted on average zero employment growth. For example, the construction sector grew provincially but was stable in the town (locally) from 2001 to 2018. This is likely due to major construction projects such as Muskrat Falls outside the city contributed to the growth factor provincially while the downturn in the oil dominated economy of the NE Avalon Urban Core impacted the construction industry in the NE Avalon Urban Core.

The other two sectors that experienced net zero growth in Torbay (health and personal care stores, and accounting services) are quite small and difficult to make generalize interpretations.

Table 11 presents those industries and businesses that were stressed or experienced a net job loss from 2001 to 2018. The dynamics for the 4 industries listed are somewhat overlapping with the downturn in the oil sector, supply and demand for services and competition within certain retail sectors. For example, architectural and structural metals manufacturing are stressed locally but growing provincially. This may be related to the broader trends found in construction where activity has been focused outside of the urban core recently. Also, this sector's volatility is moderate indicating that employment shifts were fairly variable (low to high employment) from 2013-2018. The declines found in social assistance, and personal care and other personal services may be related to forces of centralization within the NE Avalon Urban Core. It should be noted, however, that all of these industries are small so the classification could be affected by firm-level volatility, as well.

Table 10: Torbay Shift-Share Analysis Outcomes by Local Industries that are Stable from 2001 to 2018

Industry (Numbers in brackets = employment rank)	2018 Est. Employment	Prov. Growth Trend (2001 - 2018)	Local Growth Trend (2001 - 2018)	Employment Volatility (2013-2018)
Construction (1)	299	Growing	Stable	Low
Health and personal care stores (22)	15	Stable	Stable	Low
Accounting, tax preparation, bookkeeping and payroll services (24)	13	Growing	Stable	Moderate

Table 11: Torbay Shift-Share Analysis Outcomes by Local Industries that are Stressed from 2001 to 2018

Industry (Numbers in brackets = employment rank)	2018 Est. Employment	Prov. Growth Trend (2001 - 2018)	Local Growth Trend (2001 - 2018)	Employment Volatility (2013-2018)
Social assistance (11)	38	Growing	Stressed	Low
Architectural and structural metals manufacturing (13)	35	Growing	Stressed	Moderate
Personal care services and other personal services (17)	24	Stable	Stressed	Moderate
Traveller accommodation (20)	16	Stressed	Stressed	Moderate

In Table 10 the shift share analysis outcomes indicated that **construction was stable and experienced low volatility.** An examination of the construction geo-spatial supply chain outcomes will provide context for the shift share outcomes. On average the region-wide construction sector annually purchases almost $4.5 billion worth of inputs of 259 unique suppliers[14] . Proportionally, 70.9% of the inputs are purchased locally, 3.9% from other parts of the province and 25.2% from trade (other provinces or countries) (Figure 8).

Examining the origins of specific inputs (Table 12) architectural, engineering and related services accounts for 7.6% of the $ transactions between these industries and the construction sector and 82.6% is sourced locally. Note that the indirect wages and salaries accounts for 24.7% of the transactions. Overall the selected inputs listed in Table 11 accounts for 60.5% of all $ value transactions linked to the construction industry. The local direct and indirect job and dollar multipliers for construction are 1.57 and $1.25 respectively. Thus, it is estimated that every local construction job indirectly supports 1.59 jobs in the province of which 1.57 are local. Every $1 in local construction expenditure on average indirectly generates overall another $1.57 in the economy of which $1.25 is local. Note these estimates are based on averages and do not include induced effects (e.g. impact on consumer spending through wages and salaries) which has a significant impact on the local economy. Any downturn in this sector will have a significant impact on its supply chain and the overall economy.

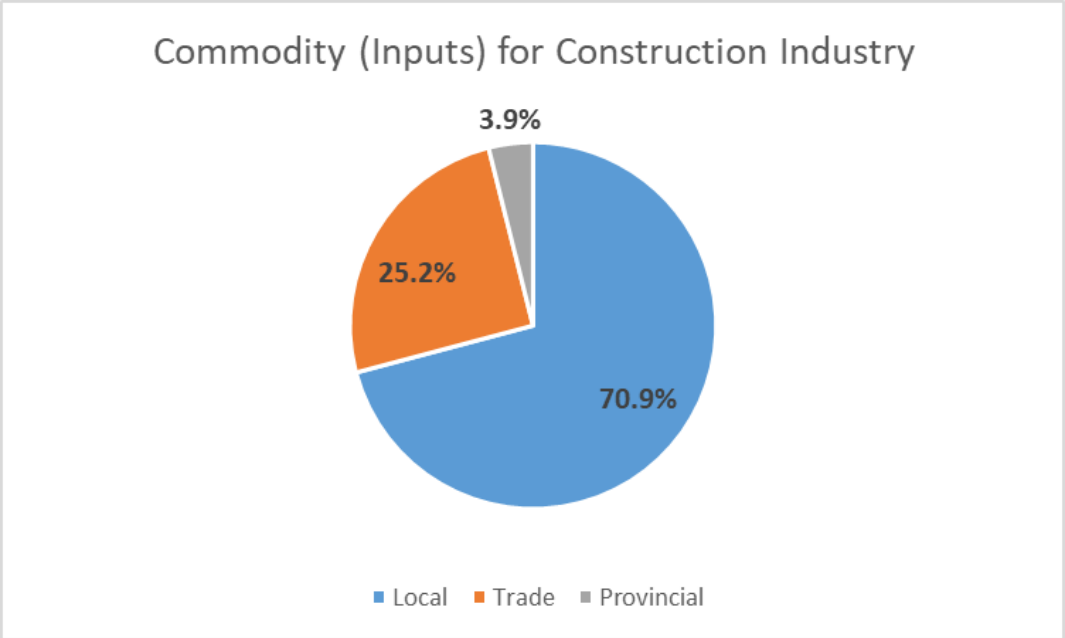

Figure 8: Commodity (Inputs) Origins for Construction Industry

[14] In this case unique suppliers refers to the North American Industry Codes (NAIC) used in the Stats Canada Business Registry databases.

Table 12: Construction Partial Supply Chain: Percent of Indirect Total Value Transactions

Construction Inputs	Source		
	Local	Provincial	Trade
Wages and salaries	24.70%	x	x
Architectural, engineering and related services	6.27%	x	1.32%
Support services for oil and gas extraction (except exploration)	3.47%	0.89%	0.01%
Wholesale margins - building materials and supplies	1.73%	x	0.51%
Prefabricated metal buildings and components	1.54%	0.18%	0.37%
Other miscellaneous general-purpose machinery	0.47%	1.58%	x
Metal valves and pipe fittings	x	x	1.56%
Commercial and industrial machinery and equipment (except office equipment) rental and leasing services	0.51%	x	0.76%
Measuring, control and scientific instruments	x	x	1.15%
Fabricated steel plates and other fabricated structural metal	0.63%	0.14%	0.34%
Wholesale margins - machinery, equipment and supplies	0.66%	x	0.44%
Other architectural metal products	0.21%	0.11%	0.76%
Retail margins - building materials, garden equipment and supplies	1.06%	0.01%	x
Legal services	1.04%	x	x
Plastic and foam building and construction materials	x	x	1.01%
Truck transportation services for specialized freight	0.94%	x	0.02%
Concrete products	0.07%	x	0.79%
Accounting, tax preparation, bookkeeping and payroll services	0.72%	0.00%	x
Medical devices	x	x	0.70%
Iron and steel pipes and tubes (except castings)	x	x	0.70%
Ready-mixed concrete	0.67%	0.02%	x
Communication and electric wire and cable	x	x	0.66%
Turbines, turbine generators, and turbine generator sets	x	x	0.66%
Sales of other government services	0.54%	x	x
Lighting fixtures	x	x	0.53%

As mentioned above any downturn in the construction sector will have a significant impact on the local economy. This is further supported by the number of indirect jobs created in the NE Avalon via its $ transactions with other industries. For example, architectural, engineering and related services have 2,607 indirect jobs linked to construction, and building material wholesalers-distributors have 733 (Figure 9). Therefore, it is quite important to assess how the construction sector is impacted by any downturns in consumer spending or oil and gas expenditure, and conversely examine how impacts propagate across the economy when there is growth.

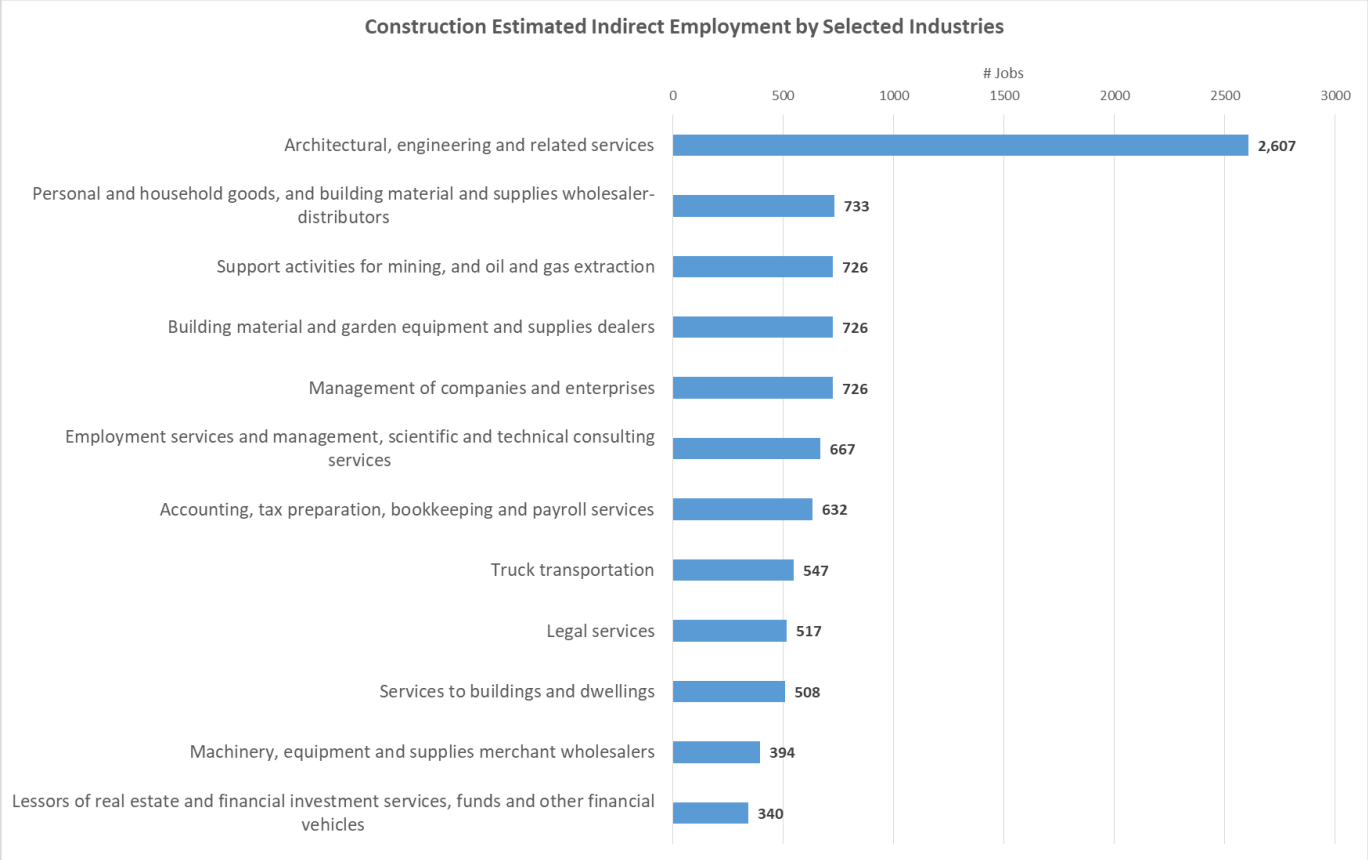

Figure 9: Construction Estimated Indirect Employment by Selected Industries

6.0 Occupational Trends

An examination of workforce skills and projections along with occupation trends required the integration of occupation, education and skills databases produced by Statistics Canada. This information provides an overview of the labour market for the North East Avalon Urban Core and the town of Torbay and provides some context for future labour challenges presented by an ageing workforce and a shift in skills**.**

In this case skills are based on Statistics Canada definitions where:

[1] Skill A refers to a class of workers and related occupations that have a university education,

[2] Skill B refers to those workers whose education and training is primarily obtained through colleges and apprenticeships,

[3] Skill C includes workers who have a high school education that is associated with some occupation specific training and

[4] D level skills are related to on the job training whereby the workers may or may not have completed high school.

Given that a majority of the labour market for the region is primarily within St. John's and the other 5 participating municipalities the skill predictions presented in Table 13 includes the working age population between 15 and 64 years of age for the North East Avalon Urban Core. The numbers represent the "potential pool" of workers for each skill group. Note that only a portion of this potential pool of workers participate in the workforce (e.g. reflected in the participation rate for a city or region). Note that the predictions are based on the historical migration demographic model and the 2016 skills data for the North East Avalon Core.

In Table 13 skills A, B, and C continually increase at varying rates from 2016 to 2035 if historical migration trends continue for the North East Avalon Urban Core where skill level A increases from 39,025 in 2016 to 50,596 by 2035. Likewise, skill level B increases from 58,105 to 65,989 and skill level C increases from 39,300 to 45,083 for the same period (Table 13). However, skill level D only increases from 22,138 in 2016 to 23,105 by 2025. There is a decline from 23,105 in 2025 to 22,619 by 2030 with further decline to 22,603 by 2035. This trend is especially evident in Figure 10 where from 2016 to 2020 there is a 4.8% increase of the potential skill D workforce. Although there is an overall net increase from 2016 to 2035 (e.g. 22,138 to 22,603) the 5-year interval predictions indicate a year to year decline. For example, from 2020 to 2025 there is a decline of 0.4%, -2.1% decline from 2025 to 2030 and a 0.1% decline from 2030 to 2035 (Figure 10).

Table 13: Historical Migration Model Prediction of Potential Labour Force Skills

Year	A	B	C	D	Row Total
2016	39025	58105	39300	22138	158570
2020	39232	57711	41275	23209	161426
2025	43767	61471	43112	23105	171455
2030	46801	63251	43758	22619	176430
2035	50596	65989	45083	22603	184271

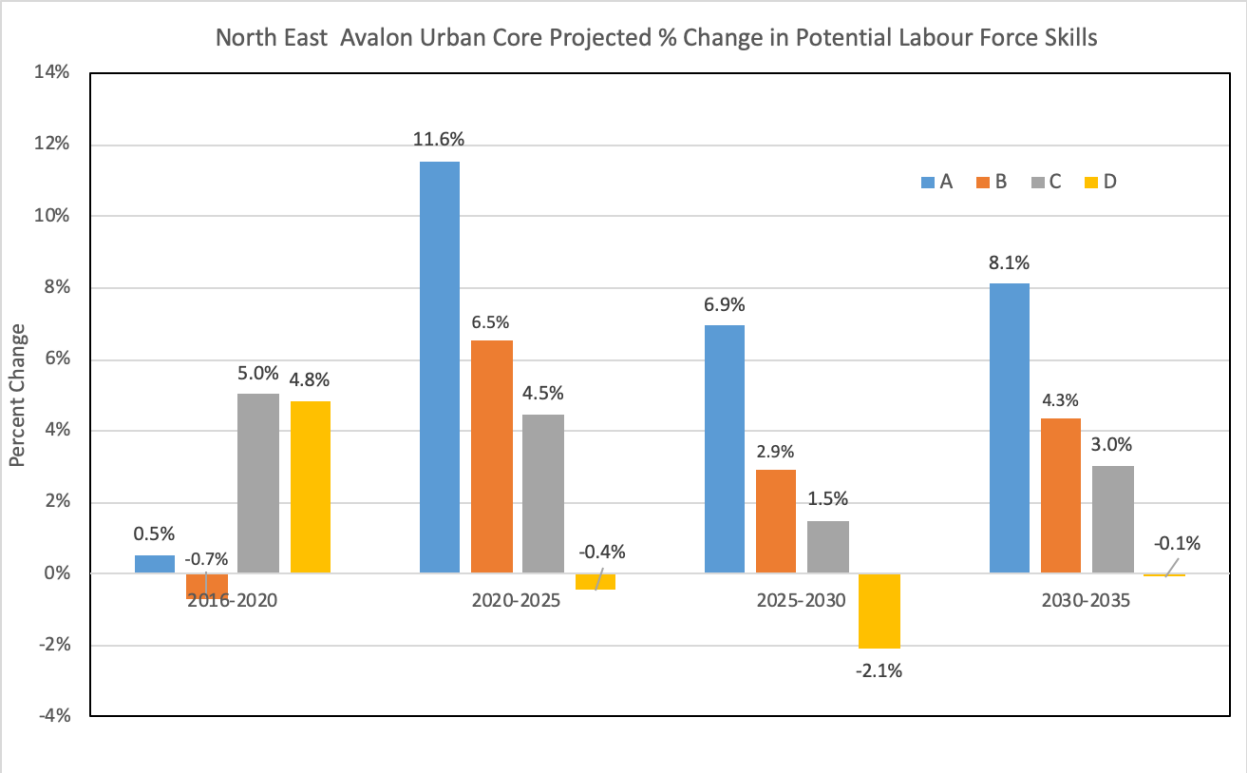

Figure 10: North East Avalon Urban Core Predicted % Change in Potential Labour Force Skills

An examination of the overall net growth from 2016 to 2035 skill level A increases by 29.6%, B by 13.6%, C 14.7% and D 2.1%. Although those increases represent "potential" and the numbers are reduced by actual participation rates and, the question becomes, do the differences between the "potential" and "actual" participation rates provide enough replacement workers for those retiring?

To examine this issue Table 14 presents a list of the top ten employment industries for the North East Avalon Urban Core. The oldest occupation, professional occupations in education services the skill level is A, the average age is 55.1 and 62% of the occupations is 45 years of age or older.

Industrial, electrical and construction workers is the second oldest and is classed as skill level B, average age of 54.2 with 60% of the workers aged 45 or older. For C skill level transport and

heavy equipment is the oldest with an average age of 53.4 and there are 60% of its workers 45 years of age or older. Office support workers is the oldest in skill class D with an average age of 53.3 and 61% of the work force aged 45 or older. In the top 10 employers all occupations and skill levels has more than 50% (58% to 62%) of its workers at 45 years of age or older (Table 14). The question becomes in situations where there are not enough younger workers is there a willingness for workers in the different skill levels, where possible, take jobs with lower skill requirements. For example, level A workers taking B level skill jobs or skill level C taking D level jobs) or moving from a lower skill job to a higher skill job (e.g. skill D to C) that will require additional training?

Table 14: Top Ten Employment Industries Skill Level, Avg. Age and % Employment Aged 45+

Top 10 Occupations North East Avalon Urban Core	Skill Level	Mean Age	Employment (All Ages), 2016	Employment (45+), 2016	% of Employment 45+, 2016
Service support and other service occupations, n.e.c.	D	53	3187	2238	59%
Industrial, electrical and construction trades	B	54.2	2908	2130	60%
Professional occupations in education services	A	55.1	2513	1874	62%
Care providers and educational, legal and public protection support occupations	C	53	2400	1690	60%
Office support occupations	C	53.3	2332	1688	61%
Sales representatives and salespersons - Wholesale and retail trade	C	52.3	2327	1610	58%
Administrative and financial supervisors and administrative occupations	B	52.8	2296	1657	60%
Service representatives and other customer and personal services occupations	C	52.2	2206	1522	58%
Sales support occupations	D	52.8	2151	1641	59%
Transport and heavy equipment operation and related maintenance occupations	C	53.4	1637	1574	60%

In Torbay 26.8% of the available workforce have a background roughly equivalent to skill level A, 43.6% skill level B, 22.5% skill level C and 7.0% skill level D (Figure 11). In context of the region's economy relatively more people have a high school diploma than not which implies fewer skill level D workers and that primarily skill level C workers are in higher demand.

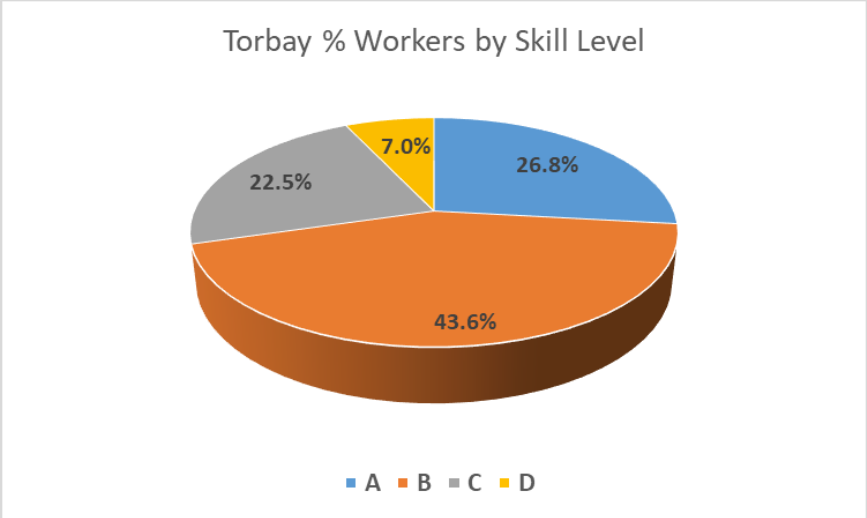

Figure 11: Torbay Percent Workers by Skill Level

Occupations with skill levels A, B, C and D has 58% to 62% of workers 45 years of age or older. The demographics of the region suggest there will shortfalls in future requirements for those skills including the potential for skill mismatches. These mismatches (e.g. D skill workers retrained to work in skill level C jobs) can be addressed by either targeted immigration for workers with the requisite skill levels or encourage non-participants in the workforce to participate.

For example, for Torbay there is a low participation in skill level D workers (39.6%) as well as a high unemployment rate (13.1%). Conceptually, D skill workers (non-participating) can be trained to do skill level C jobs with retraining. Likewise, shortfalls in many B skill level jobs can be partially filled by retraining C skill level workers. However, further investigation is required to determine why specific skill levels have low participation rates (see Tables 15 and Table 16). Note the low unemployment rates for skill level A (5.4%) which is equal to the level for Canada (5.4%).

Table 15: Torbay 2016 Employment Participation Rate by Skill Level

Geography (Participation Rate 2016)	A	B	C	D
Canada	78.1%	72.5%	63.6%	38.3%
NE Avalon Urban Core	79.2%	72.7%	61.9%	32.6%
Newfoundland and Labrador excluding NE Avalon Urban Core	72.1%	68.5%	54.7%	30.3%
Torbay	82.0%	75.9%	65.7%	39.6%

Table 16: Torbay 2016 Unemployment Rate by Skill Level

Geography (Unemployment Rate 2016)	A	B	C	D
Canada	5.4%	6.6%	9.5%	13.5%
NE Avalon Urban Core	5.5%	7.9%	11.3%	14.9%
Newfoundland and Labrador excluding NE Avalon Urban Core	6.7%	18.1%	23.9%	33.7%
Torbay	3.9%	7.9%	11.3%	13.1%

Tables 17 and 18 present Torbay Participation and Unemployment Rate by Age Cohort. For age cohorts 25-34 to 45-54 is consistent with values ranging between 86.3% and 91.3%. The lower values for 15-24 (63.6%), 55-64 (49.7%) and 65-74 (14.6%) would suggest that there are opportunities to increase the participation rates for the younger cohorts unless there are underlying factors that prevent their participation in the workforce (Table 16).

The unemployment rates in (Table 18) would also suggest there are under-utilized workers in the labour market and future supply and demand issues need to examine how to increase participation to replace retiring workers.

Table 17: Torbay 2016 Employment Participation Rate by Age Cohort

Geography (Participation Rate 2016)	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over
Canada	61.4%	85.5%	87.0%	85.3%	65.0%	21.6%	4.7%
NE Avalon Urban Core	63.3%	85.4%	87.0%	85.3%	58.5%	17.9%	3.3%
Newfoundland and Labrador excluding NE Avalon Urban Core	49.5%	80.5%	82.4%	79.1%	56.4%	13.5%	2.0%
Torbay	63.6%	88.0%	91.3%	86.3%	49.7%	14.6%	4.3%

Table 18: Torbay 2016 Unemployment Rate by Age Cohort

Geography (Unemployment Rate 2016)	15 to 24 years	25 to 34 years	35 to 44 years	45 to 54 years	55 to 64 years	65 to 74 years	75 years and over
Canada	15.5%	7.8%	5.8%	5.5%	6.6%	6.9%	8.8%
NE Avalon Urban Core	17.1%	8.9%	6.7%	5.3%	7.5%	7.3%	16.1%
Newfoundland and Labrador excluding NE Avalon Urban Core	28.6%	19.6%	15.5%	18.0%	24.5%	28.8%	24.2%
Torbay	19.1%	8.2%	5.3%	5.1%	8.4%	14.3%	0.0%

6.1 Ageing Occupations

There are occupations in the study area that have a concentration of older workers versus younger workers. **According to Statistics Canada younger workers range in age from 25 to 34 while older workers are those that are aged 55 years or older[15]. In addition, it has been suggested that workers that reach the current retirement age of 65 will in some cases continue to work but in 2016 young seniors aged 65 to 74 had participation rate between 17.9% for the NE Avalon Urban Area to 14.6% for Torbay.**

An examination of the 2016 St. John's CMA[16] data on age and occupations[17] (Figure 12) indicates that:

- Out of 103,005 workers 3,105 or 3.01% were aged 65-74 years and only 275 or 0.27% were aged 75+ years (Figure 12).
- In 2016 there were 19,125 people in the CMA aged 65-74 and according to the occupation data 16.2% were working while 275 out of 5560 aged 75+ years or 4.9% were employed.

[15] Ouellet-Léveillé, B. and Mialn, A. Occupations with older workers, July 25, 2019 https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00011-eng.htm

[16] The 2016 Statistics Canada St. John's CMA occupation data table is used for this review because it represents most of the regional labour market and trends are relevant because of the high degree of commuting between the municipalities in the CMA.

[17] Statistics Canada table 98-X2016295 Employed workers by age category

- Generally, the 65-74 age group or young seniors are the most active and the challenge will be to increase their participation in the labour market when there are worker shortages either by extending their careers, if appropriate, or where possible take a new career path post current retirement age.

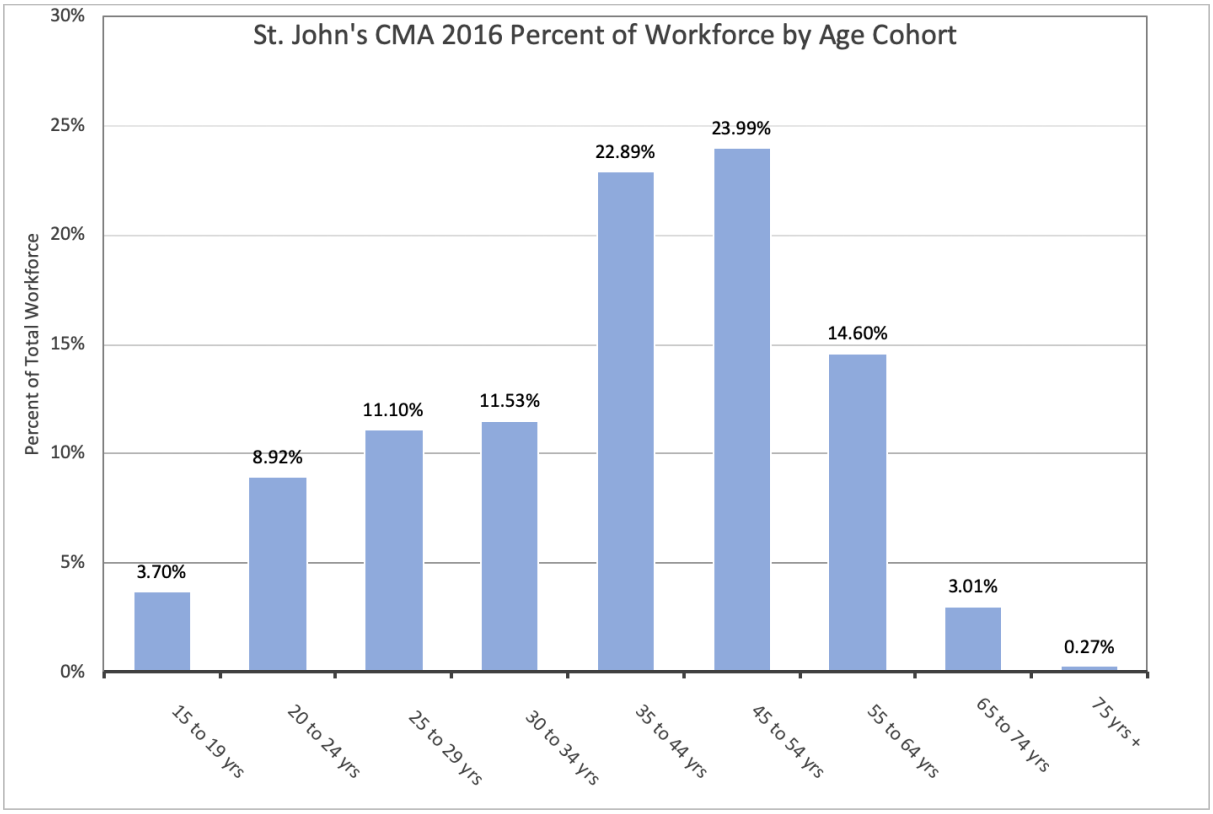

Figure 12: St. John's CMA 2016 Percent of Workforce by Age Cohort

The purpose of this section is twofold:

- Firstly, identify occupations where there are more older workers (aged 55+) than younger workers (aged 24-34)
- Secondly, identify occupations where young seniors (aged 65-74) are employed

The ratio between younger and older workers[18] is:

- the number of younger workers (aged 24-34) ÷ number of older workers (aged 55+)
- when the ratio equals 1 there are equal numbers of younger and older workers
- when the ratio is greater than 1.0 there are more younger workers than older workers

[18] Ouellet-Léveillé, B. and Mialn, A. Occupations with older workers, July 25, 2019 https://www150.statcan.gc.ca/n1/pub/75-006-x/2019001/article/00011-eng.htm

- when the ratio is less than 1.0 there are more older workers than younger workers

Tables 19 to 24[19] contain information on occupations where the number of older workers is greater than younger workers (ratio < 1.0).

Table 19 lists management occupations that employ at least 100 workers and there is evidence of an ageing workforce. Occupations where young workers make up less than quarter of the workers in an ageing occupation (ratio ≤ 0.25)[20] are:

- Senior managers - financial, communications and other business services (ratio 0.19): 290 workers with an average age of 49.3and 36.21% of workers are aged 55+ years
- Senior managers - health, education, social and community services (ratio 0.13): 260 workers with an average age of 51.7 and 30.77% of workers are aged 55+ years
- Senior government managers and officials (ratio 0.18): 205 workers with an average age of 50.8 and 26.83% of workers are aged 55+ years
- Other business services managers (ratio 0.22): 135 workers with an average age of 50.4 and 33.33% of workers are aged 55+ years

In the above summary only, occupations that have a very low ratio (≤ 0.25)[17] of young workers were highlighted. This generally indicates that very few younger workers are present and a strategy would be to start planning for training, attracting, or retaining young workers to correct the imbalance and potential future labour shortages. However, any ratio < 1.0 should be an indicator of fewer younger workers in an occupation especially where the average age is somewhat high. When there is parity between younger and older works, ratio = 1 it may be an indicator that the age distribution is probably ideal. For ratios > 1.0 it generally indicates an increasing dominance of younger workers employed in an occupation.

From Table 19 there are several occupations where the number of older workers (ratio < 0.50) are more than twice the number of younger workers and they are:

- Corporate sales managers (average age 47.4)
- Manufacturing managers (average age 47.4)
- Administrators - post-secondary education and vocational training (average age 47.1)
- Senior managers - trade, broadcasting and other services, n.e.c. (average age 49.6)
- Home building and renovation managers (average age 47.6)

[19] For Tables 19 to 22 only occupations with at least 100 workers are displayed. The "% workers aged 55+ yrs" is the percent of workers in that age class. For example, if 40% of the workers are in older worker age class then 60% of the workers are in a younger age class.

[20] The ratio of 0.25 or less is used to identify those occupations that are rapidly ageing and very few young workers are employed in an occupation. Note that there are occupations where there are fewer young workers because of the education requirements and years of training. In those cases, it is important to examine the average age of the occupation to make an assessment.

Table 19: St. John's CMA 2016 Management Occupations - Younger (Aged 24-34) versus Older Workers (Aged 55+)

National Occupation Codes	Average Age	Number of workers	Ratio of younger workers to older workers	% workers aged 55+ yrs
0621 Retail and wholesale trade managers	44.8	2435	0.78	21.97%
0714 Facility operation and maintenance managers	45.3	445	0.55	24.72%
0111 Financial managers	45.1	435	0.93	17.24%
0124 Advertising, marketing and public relations managers	44.1	400	0.86	17.50%
0213 Computer and information systems managers	45.3	295	0.90	16.95%
0013 Senior managers - financial, communications and other business services	49.3	290	0.19	36.21%
0014 Senior managers - health, education, social and community services and membership organizations	51.7	260	0.13	30.77%
0601 Corporate sales managers	47.4	245	0.44	32.65%
0911 Manufacturing managers	47.4	240	0.42	25.00%
0114 Other administrative services managers	45.4	235	0.88	17.02%
0311 Managers in health care	47.4	230	0.55	23.91%
0421 Administrators - post-secondary education and vocational training	47.1	225	0.36	24.44%
0012 Senior government managers and officials	50.8	205	0.18	26.83%
0423 Managers in social, community and correctional services	45.9	205	0.78	21.95%
0015 Senior managers - trade, broadcasting and other services, n.e.c.	49.6	180	0.38	36.11%
0731 Managers in transportation	45.5	180	0.70	27.78%
0113 Purchasing managers	45.9	155	0.75	12.90%
0712 Home building and renovation managers	47.6	140	0.43	25.00%
0125 Other business services managers	50.4	135	0.22	33.33%
0121 Insurance, real estate and financial brokerage managers	45.2	110	0.50	18.18%
0632 Accommodation service managers	50.8	110	0.50	45.45%
0821 Managers in agriculture	46.1	100	0.71	35.00%

Table 20 contains those occupations that generally require a university education. These are occupations where older workers are more likely to extend their careers rather than change a career path in retirement.

Occupations where ratios indicate that young workers make up less than quarter of the of the workers in an ageing occupation (ratio ≤ 0.25)[21] are:

- University professor and lectures (ratio 0.13): 1040 workers with an average age of 50 and 35.10% of workers are aged 55+ years
- Professional occupations in religion (ratio 0.18): 120 workers with an average age of 53.3 and 45.83% of the workers are aged 55+ years

[21] The ratio of 0.25 or less is used to identify those occupations that are rapidly ageing and very few young workers are employed in an occupation. Note that there are occupations where there are fewer young workers because of the education requirements and years of training. In those cases, it is important to examine the average age of the occupation to make an assessment.

Table 20: St. John's CMA 2016 Occupations Requiring a University Education[22] - Younger (Aged 24-34) versus Older Workers (Aged 55+)

National Occupation Codes	Average Age	Number of workers	Ratio of younger workers to older workers	% workers aged 55+ yrs
4011 University professors and lecturers	50.0	1040	0.14	35.10%
1114 Other financial officers	45.6	605	0.74	25.62%
4112 Lawyers and Quebec notaries	46.2	560	0.71	25.00%
4021 College and other vocational instructors	46.8	545	0.62	23.85%
3111 Specialist physicians	45.7	455	0.92	26.37%
1122 Professional occupations in business management consulting	46.1	355	0.63	22.54%
4166 Education policy researchers, consultants and program officers	46.6	200	0.75	20.00%
4151 Psychologists	45.8	165	0.63	24.24%
4033 Educational counsellors	44.1	160	0.83	18.75%
3011 Nursing co-ordinators and supervisors	47.5	135	0.75	29.63%
4154 Professional occupations in religion	53.3	120	0.18	45.83%
2154 Land surveyors	46.8	100	0.75	40.00%

Table 21 presents those occupations where college or apprenticeships are required. There is only one occupation considered to be ageing rapidly (ratio = 0.20) with two others approaching the high ageing factor with ratios of 0.30 and 0.33. The three occupations within these categories are:

- Contractors and supervisors, mechanic trades (ratio 0.20): 155 workers with an average age of 47.2 and 32.26% of the workers are age 55+ years
- Drafting technologists and technicians (ratio 0.30): 155 workers with an average age of 49.4 and 32.26% of the workers are age 55+ years
- Other service supervisors (ratio 0.33): 105 workers with an average age of 46.2 and 28.57% of the workers age 55+.

Examples of other occupations (Table 21) that are exhibiting an imbalance between young and older workers are:

- Real estate agents and salespersons
- Medical administrative assistants
- Executive assistants
- Contractors and supervisors, heavy equipment operator crews
- Heavy-duty equipment mechanics
- Drafting technologists and technicians
- Contractors and supervisors, mechanic trades

[22] Note that for some management positions a university education is not required but are based on work experience

Table 21: St. John's CMA 2016 Occupations Requiring College or Apprenticeships - Younger (Aged 24-34) versus Older Workers (Aged 55+)

National Occupation Codes	Average Age	Number of workers	Ratio of younger workers to older workers	% workers aged 55+ yrs
7271 Carpenters	43.3	895	0.90	22.35%
1228 Employment insurance, immigration, border services and revenue officers	44.4	545	0.88	22.02%
6232 Real estate agents and salespersons	49.5	440	0.42	37.50%
1311 Accounting technicians and bookkeepers	45.3	415	0.70	27.71%
1243 Medical administrative assistants	46.9	350	0.53	27.14%
8262 Fishermen/women	45.3	285	0.93	26.32%
1222 Executive assistants	45.5	255	0.55	21.57%
1242 Legal administrative assistants	43.1	250	0.91	22.00%
9241 Power engineers and power systems operators	45.1	230	0.73	32.61%
7294 Painters and decorators (except interior decorators)	48.4	225	0.38	28.89%
7302 Contractors and supervisors, heavy equipment operator crews	45.3	205	0.88	19.51%
7312 Heavy-duty equipment mechanics	47.4	195	0.62	33.33%
1224 Property administrators	48.1	190	0.64	36.84%
2253 Drafting technologists and technicians	49.4	155	0.30	32.26%
7301 Contractors and supervisors, mechanic trades	47.2	155	0.20	32.26%
7204 Contractors and supervisors, carpentry trades	47.6	135	0.44	33.33%
4216 Other instructors	44.5	125	0.43	28.00%
6316 Other services supervisors	46.2	105	0.33	28.57%
7201 Contractors and supervisors, machining, metal forming, shaping and erecting trades and related occupations	46.8	100	0.50	20.00%

Table 22 contains a list of occupations that require at least a high school diploma and/or some post-secondary training along with on the job training. These occupations are experiencing, in various degrees, young versus older worker imbalances with ratios less than 1.0. There are three occupations with high disproportion between younger and older workers where the ratios are 0.25 or less and they are:

- Taxi and limousine drivers and chauffeurs (ratio 0.17): 265 workers with an average age of 53.2 and 54.72% age 55+
- Bus drivers, subway operators and other transit operators (ratio 0.08): 245 workers with an average age of 51.7 and 48.98% age 55+
- Survey interviewers and statistical clerks (0.25): 110 workers with an average age of 48.8 and 36.36% age 55+

Other occupations that are starting to transition where the number of older workers is becoming dominate are:

- Home support workers, housekeepers, and related occupations
- Transport truck drivers
- Security guards and related security service occupations
- Heavy equipment operators (except crane)
- Elementary and secondary school teacher assistants
- General farm workers
- Couriers, messengers and door-to-door distributors
- Letter carriers

Table 22 St. John's CMA 2016 Occupations Requiring at Least High School and/or some Post-Secondary or on the Job Training - Younger (Aged 24-34) versus Older Workers (Aged 55+)

National Occupation Codes	Average Age	Number of workers	Ratio of younger workers to older workers	% workers aged 55+ yrs
1411 General office support workers	43.9	1855	0.80	22.64%
4412 Home support workers, housekeepers and related occupations	44.8	1340	0.55	31.34%
1431 Accounting and related clerks	44.5	1030	0.82	21.84%
7511 Transport truck drivers	47.2	860	0.37	30.23%
6541 Security guards and related security service occupations	41.8	810	0.84	27.78%
6411 Sales and account representatives - wholesale trade (non-technical)	46.5	590	0.42	27.97%
7521 Heavy equipment operators (except crane)	44.5	575	0.96	24.35%
4413 Elementary and secondary school teacher assistants	45.5	330	0.31	19.70%
1522 Storekeepers and partspersons	43.2	300	0.95	31.67%
7513 Taxi and limousine drivers and chauffeurs	53.2	265	0.17	54.72%
1422 Data entry clerks	43.8	255	0.73	21.57%
7512 Bus drivers, subway operators and other transit operators	51.7	245	0.08	48.98%
1511 Mail, postal and related workers	45.7	205	0.45	26.83%
1513 Couriers, messengers and door-to-door distributors	49.2	150	0.36	36.67%
8431 General farm workers	36.5	150	0.33	20.00%
7534 Air transport ramp attendants	40.9	135	0.71	25.93%
1512 Letter carriers	45.8	130	0.43	26.92%
1454 Survey interviewers and statistical clerks	48.8	110	0.25	36.36%

Table 23 includes those occupations that are ageing and require on the job training. There are no occupations where the number of older workers is dominating an occupation (ratio ≤ 0.25) but there are six occupations where the older workers are more than twice the number of young workers (ratio < 0.50) and they are:

- Janitors, caretakers and building superintendents (average age 46.9)
- Landscaping and grounds maintenance labourers (average age 47.7)
- Public works and maintenance labourers (average age 48.3)
- Other sales related occupations (average age 48.0)

Table 23: St. John's CMA 2016 Occupations Requiring on the Job Training - Younger (Aged 24-34) versus Older Workers (Aged 55+)

National Occupation Codes	Average Age	Number of workers	Ratio of younger workers to older workers	% workers aged 55+ yrs
6733 Janitors, caretakers and building superintendents	46.9	1295	0.46	32.43%
6731 Light duty cleaners	44.6	1245	0.57	25.30%
8612 Landscaping and grounds maintenance labourers	47.7	260	0.32	42.31%
6741 Dry cleaning, laundry and related occupations	43.1	210	0.67	21.43%
6732 Specialized cleaners	32.0	190	0.75	10.53%
7621 Public works and maintenance labourers	48.3	175	0.42	34.29%
9619 Other labourers in processing, manufacturing and utilities	42.4	125	0.57	28.00%
6623 Other sales related occupations	48.0	115	0.40	43.48%

Table 24 provides a list of occupations where employment for workers age 65-74 is at least 2 times above the CMA average for that cohort. There are 14 occupations where young seniors represent at least 10% of the employees and they are:

- Specialist physicians
- Real estate agents and salespersons
- Accounting technicians and bookkeepers
- Taxi and limousine drivers and chauffeurs
- Senior managers - construction, transportation, production, and utilities
- Corporate sales managers
- Bus drivers, subway operators and other transit operators
- Couriers, messengers and door-to-door distributors
- Sheet metal workers
- Other business services managers
- Professional occupations in religion
- Other sales related occupations
- Accommodation service managers
- Managers in agriculture
- Authors and writers

The top five employers with at least 5% of their workforce age 65-74 years are:

- Home support workers, housekeepers and related occupations
- Janitors, caretakers and building superintendents
- University professors and lecturers
- Transport truck drivers
- Security guards and related security service occupations

Table 24: St. John's CMA 2016 Occupations where Employment of Workers Age 65-74 are at Least Twice the CMA Average

National Occupation Code	Average Age	Number of Workers	% workers age 65 - 74 yrs
4412 Home support workers, housekeepers and related occupations	44.8	1340	6.34%
6733 Janitors, caretakers and building superintendents	46.9	1295	6.56%
4011 University professors and lecturers	50.0	1040	9.62%
7511 Transport truck drivers	47.2	860	6.98%
6541 Security guards and related security service occupations	41.8	810	8.02%
1114 Other financial officers	45.6	605	9.09%
3111 Specialist physicians	45.7	455	10.99%
6232 Real estate agents and salespersons	49.5	440	17.05%
1311 Accounting technicians and bookkeepers	45.3	415	12.05%
7513 Taxi and limousine drivers and chauffeurs	53.2	265	18.87%
0014 Senior managers - health, education, social and community services and membership organizations	51.7	260	9.62%
8612 Landscaping and grounds maintenance labourers	47.7	260	7.69%
0016 Senior managers - construction, transportation, production and utilities	51.7	245	10.20%
0601 Corporate sales managers	47.4	245	6.12%
7512 Bus drivers, subway operators and other transit operators	51.7	245	10.20%
0911 Manufacturing managers	47.4	240	8.33%
0423 Managers in social, community and correctional services	45.9	205	7.32%
1511 Mail, postal and related workers	45.7	205	7.32%
7312 Heavy-duty equipment mechanics	47.4	195	7.69%
0015 Senior managers - trade, broadcasting and other services, n.e.c.	49.6	180	8.33%
6742 Other service support occupations, n.e.c.	35.5	170	8.82%
4151 Psychologists	45.8	165	6.06%
1452 Correspondence, publication and regulatory clerks	43.8	160	6.25%
2234 Construction estimators	41.6	160	6.25%
3215 Medical radiation technologists	40.4	160	6.25%
4033 Educational counsellors	44.1	160	6.25%
6722 Operators and attendants in amusement, recreation and sport	31.5	160	6.25%
2253 Drafting technologists and technicians	49.4	155	9.68%
7301 Contractors and supervisors, mechanic trades	47.2	155	6.45%
1513 Couriers, messengers and door-to-door distributors	49.2	150	10.00%
1523 Production logistics co-ordinators	44.8	150	6.67%
8431 General farm workers	36.5	150	6.67%
1524 Purchasing and inventory control workers	42.6	145	6.90%
4153 Family, marriage and other related counsellors	43.8	145	6.90%
0712 Home building and renovation managers	47.6	140	7.14%
7233 Sheet metal workers	40.9	140	10.71%
0125 Other business services managers	50.4	135	14.81%
0651 Managers in customer and personal services, n.e.c.	42.0	135	7.41%
7204 Contractors and supervisors, carpentry trades	47.6	135	7.41%
7236 Ironworkers	36.6	135	7.41%
4216 Other instructors	44.5	125	8.00%
2172 Database analysts and data administrators	44.3	120	8.33%
4154 Professional occupations in religion	53.3	120	12.50%
4211 Paralegal and related occupations	40.4	120	8.33%
6623 Other sales related occupations	48.0	115	17.39%
0632 Accommodation service managers	50.8	110	22.73%
1454 Survey interviewers and statistical clerks	48.8	110	9.09%
2147 Computer engineers (except software engineers and designers)	39.0	110	9.09%
6316 Other services supervisors	46.2	105	9.52%
0821 Managers in agriculture	46.1	100	10.00%
2154 Land surveyors	46.8	100	25.00%
5121 Authors and writers	48.1	100	15.00%

Table 25 provides a list of occupations where there are at least 100 younger workers employed and there are twice as many young workers as older workers. There are 11 occupations where the ratio of younger to older workers is 5 or higher and these occupations are:

- Food and beverage servers (ratio 11.0): 385 workers, average age 27.5 and 2.95% of total workforce is age 55+ years
- Early childhood educators and assistants (ratio 5.2): 260 workers, average age 35.8 and 5.68% of total workforce age 55+
- Post-secondary teaching and research assistants (ratio 8.0): 240 workers, average age 32.4 and 5.41% of total workforce age 55+
- Hairstylists and barbers (ratio 5.8): 230 workers, average age 35.8 and 6.11% of total workforce age 55+
- Mechanical engineers (ratio 6.1): 215 workers, average age 37 and 7.07% of total workforce age 55+
- Computer programmers and interactive media developers (ratio 6.4): 160 workers, average age 37.7 and 5.75% of total workforce age 55+
- Petroleum engineers (ratio 15): 150 workers, average age 36.1 and 2.94% of total workforce age 55+
- Industrial electricians (ratio 9.3): 140 workers, average age 35.3 and 5.36% of total workforce age 55+
- Professional occupations in advertising, marketing and public relations (ratio 5.2): 130 workers, average age 39.0 and 7.46% of total workforce age 55+
- Bartenders (ratio 6.0): 120 workers, average age 31.3 and 5.97% of total workforce age 55+
- Estheticians, electrologists and related occupations (ratio 7.0): 105 workers, average age 32.4 and 5.26% of total workforce age 55+

Table 25: St. John's CMA 2016 Occupations where Employment of Young Workers Age 25-34 is at Least 100 Workers and Twice the Number of Older Workers

National Occupation Code	Number of young workers employed	Average Age	Total number of workers	Skill Level	% Workers age 24-34	Ratio of younger workers to older workers	% Workers age 55+
4032 Elementary school and kindergarten teachers	540	40.3	1645	A	32.83%	4.2	7.90%
6513 Food and beverage servers	385	27.8	1185	C	32.49%	11.0	2.95%
4212 Social and community service workers	295	37.7	815	B	36.20%	4.9	7.36%
4214 Early childhood educators and assistants	260	35.8	880	B	29.55%	5.2	5.68%
7241 Electricians (except industrial and power system)	245	36.3	745	B	32.89%	3.3	10.07%
4012 Post-secondary teaching and research assistants	240	32.4	555	A	43.24%	8.0	5.41%
4031 Secondary school teachers	230	41.8	895	A	25.70%	3.3	7.82%
6341 Hairstylists and barbers	230	35.8	655	B	35.11%	5.8	6.11%
2132 Mechanical engineers	215	37.0	495	A	43.43%	6.1	7.07%
4152 Social workers	190	40.4	590	A	32.20%	2.9	11.02%
4311 Police officers (except commissioned)	175	40.3	530	B	33.02%	3.2	10.38%
2174 Computer programmers and interactive media developers	160	37.7	435	A	36.78%	6.4	5.75%
2133 Electrical and electronics engineers	155	40.1	380	A	40.79%	4.4	9.21%
2145 Petroleum engineers	150	36.2	340	A	44.12%	15.0	2.94%
7237 Welders and related machine operators	145	36.3	415	B	34.94%	3.2	10.84%
7242 Industrial electricians	140	35.3	280	B	50.00%	9.3	5.36%
2281 Computer network technicians	135	41.0	540	B	25.00%	3.4	7.41%
1123 Professional occupations in advertising, marketing and public relations	130	39.0	335	A	38.81%	5.2	7.46%
6311 Food service supervisors	120	34.8	390	B	30.77%	3.4	8.97%
3219 Other medical technologists and technicians (except dental health)	120	37.5	315	B	38.10%	4.8	7.94%
6512 Bartenders	120	31.3	335	C	35.82%	6.0	5.97%
5254 Program leaders and instructors in recreation, sport and fitness	115	26.3	770	B	14.94%	2.6	5.84%
6562 Estheticians, electrologists and related occupations	105	32.4	285	C	36.84%	7.0	5.26%
3131 Pharmacists	100	40.1	310	A	32.26%	2.2	14.52%

For younger workers age 24-34 in the St. John's CMA (Figure 13):

- 68.05% are employed in occupations that require university (skill level A) or college/apprentice (skill level B) training.
- 23.65% are employed in occupations that require some post-secondary or on the job training (skill level C)
- 8.31% are employed in occupations that generally require on the job training (skill level D)
- Young workers employed in in occupations requiring skill levels A and B are very mobile workforce that will migrate to other provinces or countries if there are declining opportunities locally. However, they are also occupations that, for the most part, will attract younger workers when opportunities for employment are available locally.

- Younger workers in skill levels C and D are somewhat less mobile but will leave a region if there are limited opportunities. [23]
- Another issue is that younger workers are predominantly more educated than a generation ago and the ageing factor in some occupations requiring C and D skills will potentially be a challenge in attracting younger workers because of skill mismatches. This potential labour shortage can be filled by immigration or automation where possible.

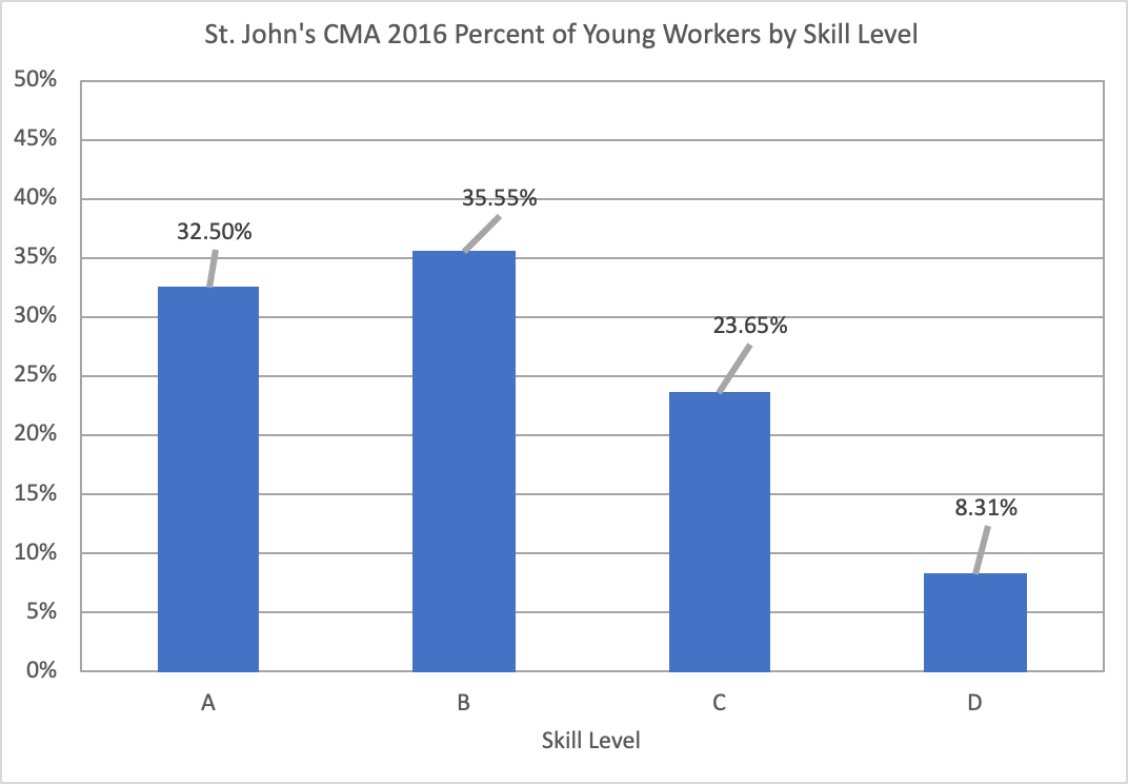

Figure 13: St. John's CMA 2016 Percent of Young Workers by Skill Level

7.0 Income Distribution and Sources

The income overview geographies are presented as North East Avalon Urban Core or the 6 participating municipalities of Conception Bay South, Mount Pearl, Paradise, Portugal Cove-St. Philips, Torbay and St. John's. In some cases, the St. John's CMA data are used and this geography includes the 6 participating municipalities along with Bauline, Bay Bulls, Flatrock, Petty Harbour-Maddox Cove, Pouch Cove and Witless Bay. Where possible the municipal boundaries or census sub-divisions (CSDs) are used. The logic for the various geographies is based on Statistics Canada data collection protocols for the different social-economic indicators

[23] Ward, Jamie Gary (2011) A spatial econometric investigation of urban proximity and labour market behaviour after the Newfoundland and Labrador cod moratorium. Masters thesis, Memorial University of Newfoundland.

and whenever the geography changes it is duly noted in the text and table or figure title. Given that the whole of North East Avalon is in a single labour market or functional economic region the aggregated data, while not the ideal option, provides insight on overall household characteristics and consumer spending behaviour.

The average **recipient** income for the North East Avalon Urban Core is $52,900 which is much higher than the rest of the province where the average income is $40, 700.

The distribution of household income classes in Figure 14 that for the rest of NL 51.80% earn less than $60,000 while in the Urban Core only 31.73% of the Urban Core households earn less than $60,000. However, 20% more of the households in the Urban core earn $60,000 or more whereby 68.28% of the Urban Core and 48.2% of the rest of NL fall within this income category.

This income distribution is reflective of what drives the economy in the Urban Core, oil and gas, construction, government services, professional consulting, and universities etc. where the higher skilled and educated workers are more concentrated than the rest of the province.

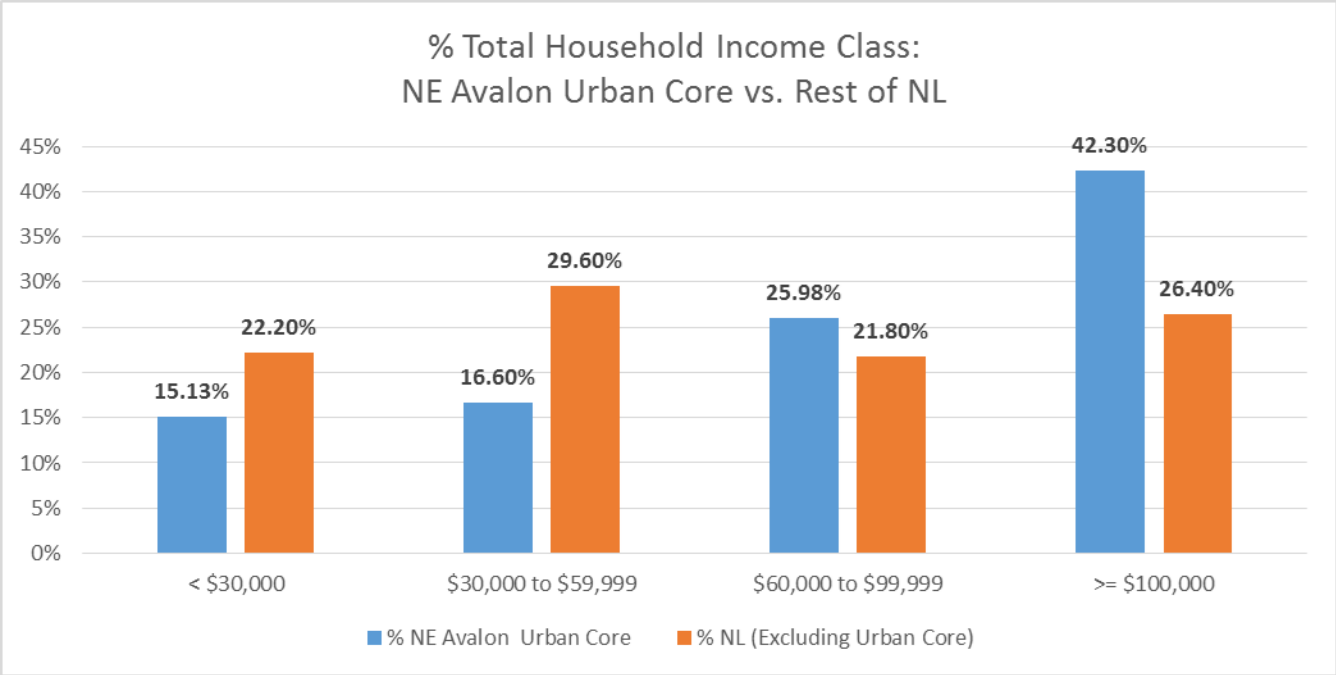

Figure 14: Percent Total Household Income: North East Avalon Urban Core vs. Rest of NL

The income source overview is intended to provide information on the well-being of a town's economy and its dependency on government transfers. In this case it is market income versus income from government transfers. In this context market income refers to all income from wages, salaries, unincorporated businesses, investment income, private pensions etc. excluding taxes and all government transfers.

For 2016 Torbay generated a total household income of $349 million where 91.9% was market income and 8.1% in government transfers. For the market income of $321 million breakdown

89.3% come from employment income while 6.8%, 1.9%, and 2.0% was sourced from private retirement, investment and other income respectively (Figure 15).

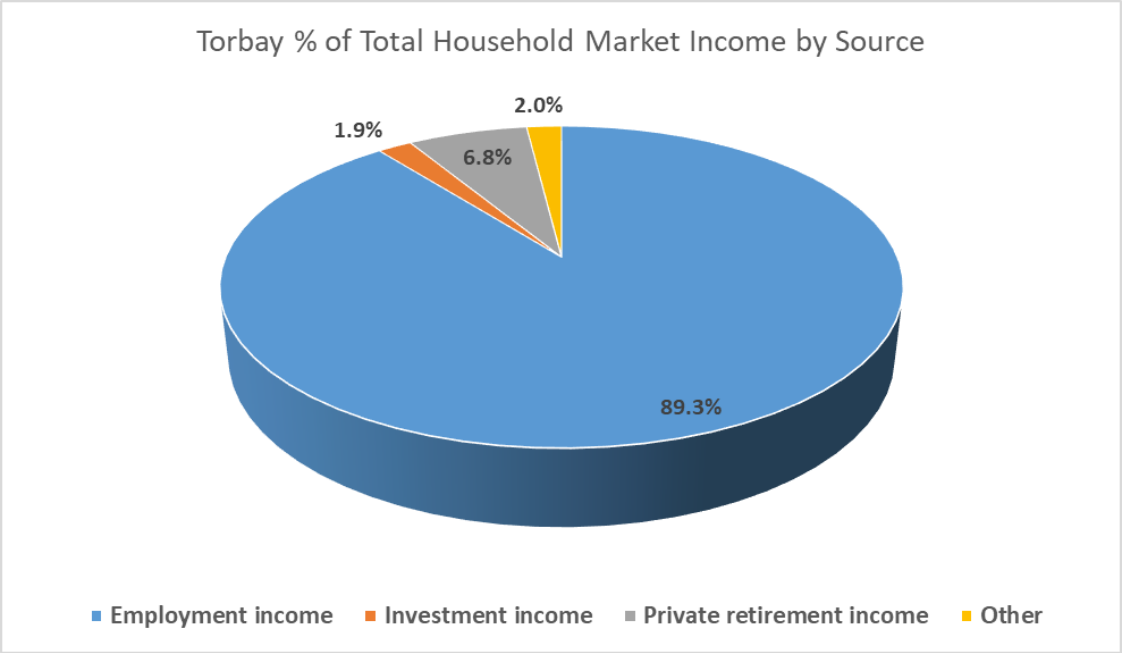

Figure 15: Torbay % of Total Household Market Income by Source

Of the $28 million household income attributed to government transfers 32.5% came from the Canada Pension Plan, 18.4% came from old age security and the guaranteed income supplement, 21.7% is associated with employment insurance, 15.2% are classed as other government transfers, and 12.2% is child benefits (Figure 16). During 2016 Torbay retirees had a total income of $33.2 million of which 65.6% came from private retirement income, 18.7 % from CPP retirement benefits, and 15.8% from OAS and GIS (Figure 17).

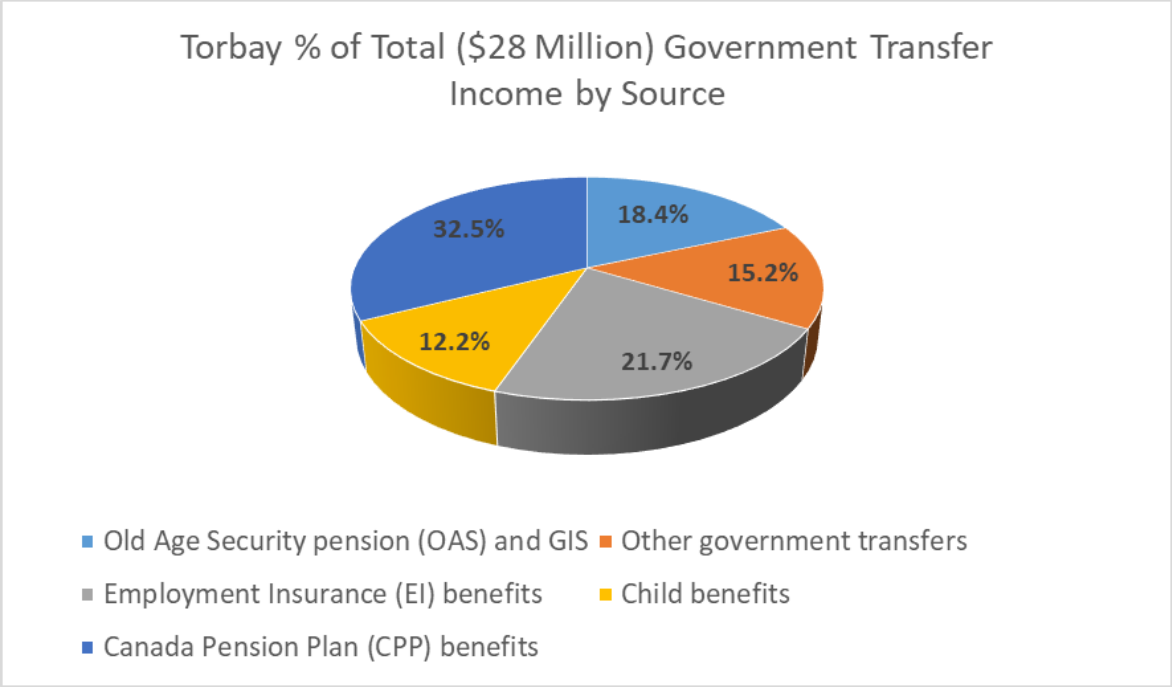

Figure 16: Torbay % of Total Government Transfer Income by Source

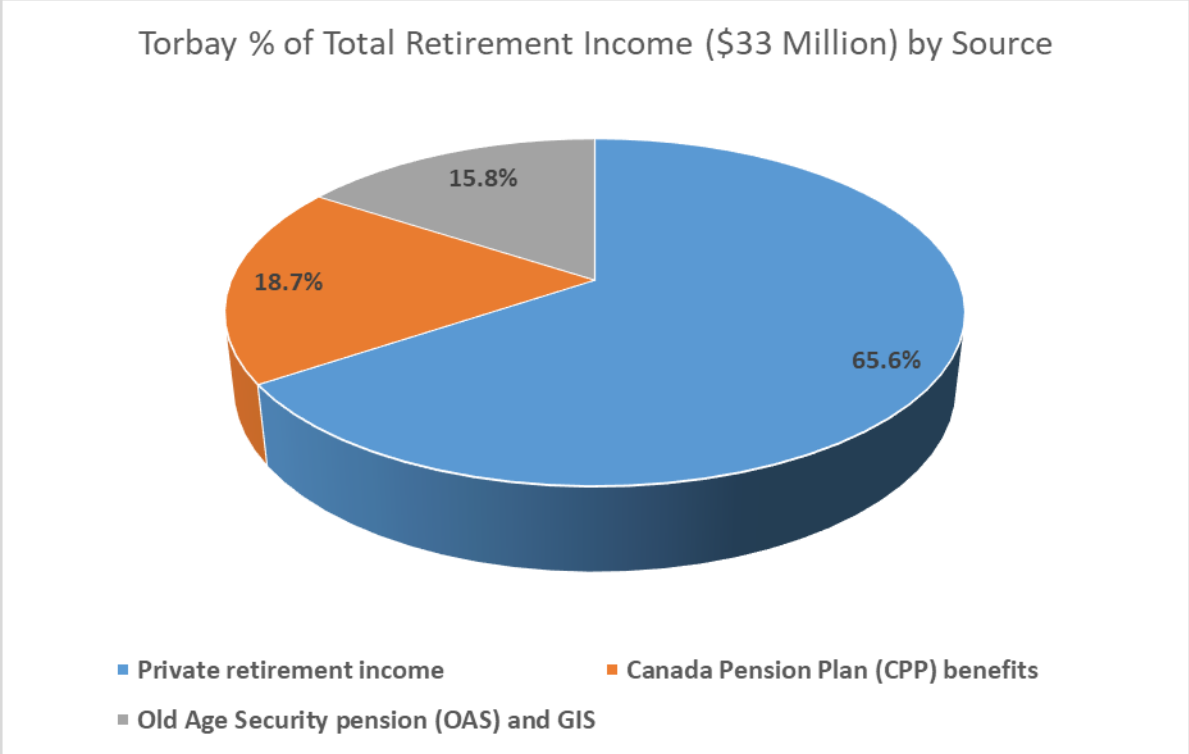

Figure 17: Torbay % of Total Retirement Income by Source

8.0 Housing Demands and Types

Within the St. John's CMA income is correlated with home ownership and subsidized renters (Table 26). For example, home ownership proportionally increases with income where only 29.2% of households earning less than $30,000 own their home whereas 92.60% of households earning $100,000 are owners (3.17 times more). Households that are classed as subsidized renters versus income class produces some interesting trends. For example, 43.20% of households earning $30,000 or less have their rent subsidized and 40.40% of households earning between $30,000 and $59,999 also have their rent subsidized. Given the lower income band on the $30,000 to $59,999 this value is in line with the $30,000 or less income class.

Of note here is that 53.20% of the $30,000 to $59,999 income class are owners while only 29.20% of the $30,000 or less class are owners. There are 29.8% of the households earning $60,000 or more living in subsidized rentals and 7.1% of these households earn $100,000 or more.

Table 26: St. John's CMA Income Class versus Household Size and Ownership Status

Income Class	Households Less Than or Equal to 2 people	Households Greater Than or Equal to 3 people	Owners	Non-Subsidized Renters	Subsidized Renters	Mean Monthly Housing Costs
< $30,000	10,225	1,295	29.20%	27.60%	43.20%	$797
$30,000 to $59,999	10,595	2,130	53.20%	6.40%	40.40%	$968
$60,000 to $99,999	13,245	6,815	76.00%	1.30%	22.70%	$1,194
>= $100,000	12,395	20,605	92.60%	0.20%	7.10%	$1,612

Another factor that may impact housing requirements in the future is that 60% of the households (46,460 out of 77,305) have 2 or less occupants and is evenly distributed across all income classes (e.g. 13.2% earn less than $30,000 and 16% earn $100,000 or more) while most of the households (35.5% of total) with 3 or more occupants earn $60,000 or more (Table 26).

An examination of housing types, size and ownership as well as the age of the home maintainer will provide insight on how these characteristics potentially impact future housing demands.

In 2016 80.9% of the houses in Torbay were single detached dwellings, 18.2% were apartments and 0.9% were row houses/semi-detached dwellings (Figure 18). When considering age of the primary household maintainer 14.5% are aged 30 years or less, 70.3% are in the 35-64 age cohort and 15.2% are in the 65+ cohort (Figure 19). Note that in 2016 62.9% of the households in Torbay contained 2 persons or less, 18.3% had 3 persons, 12.9% had 4 persons and 5.8% had 5 persons or more (Figure 20).

Given the fertility and demographic characteristics of the town it is likely that the future dominant household sizes will be 3 persons or less and in 2016 this class of household size accounted for 81.2% of the households**. This raises a question of the suitability of existing housing stock for smaller households.**

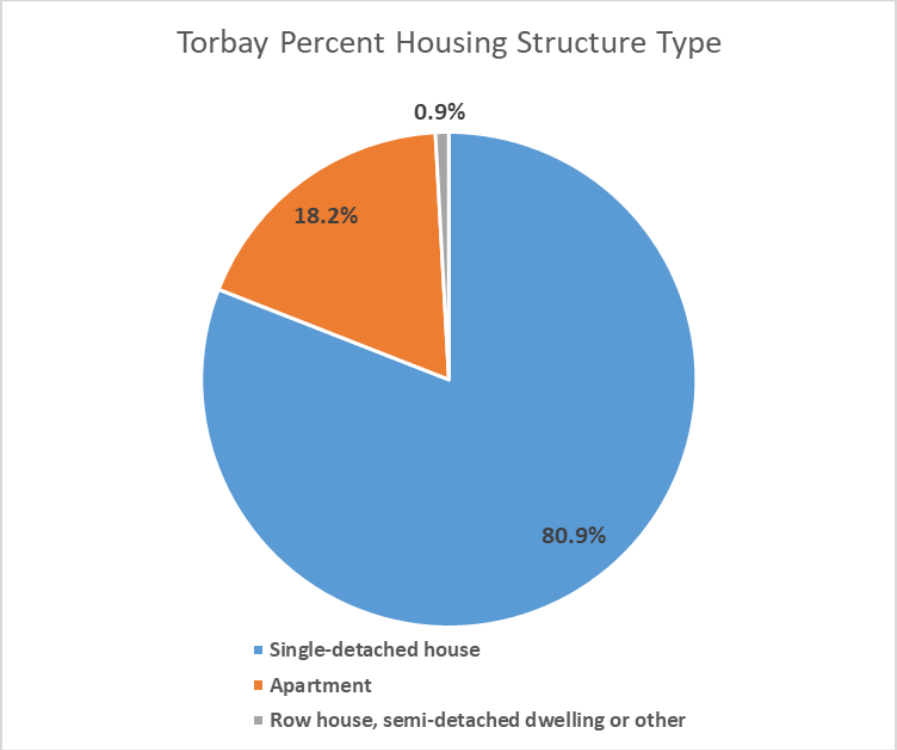

Figure 18: Torbay 2016 Percent Housing Structure Type

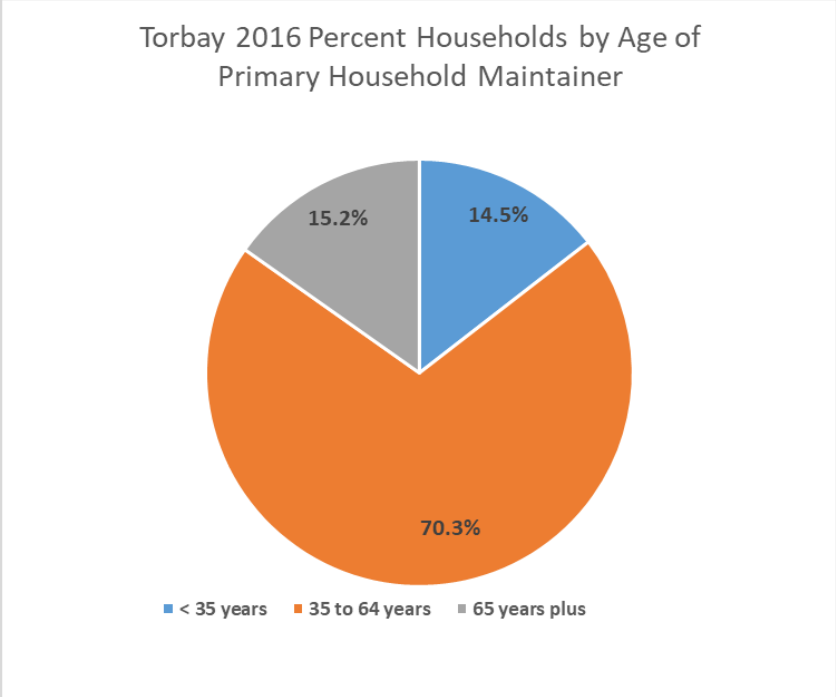

Figure 19: Torbay 2016 Percent of Households by Age of Primary Household Maintainer

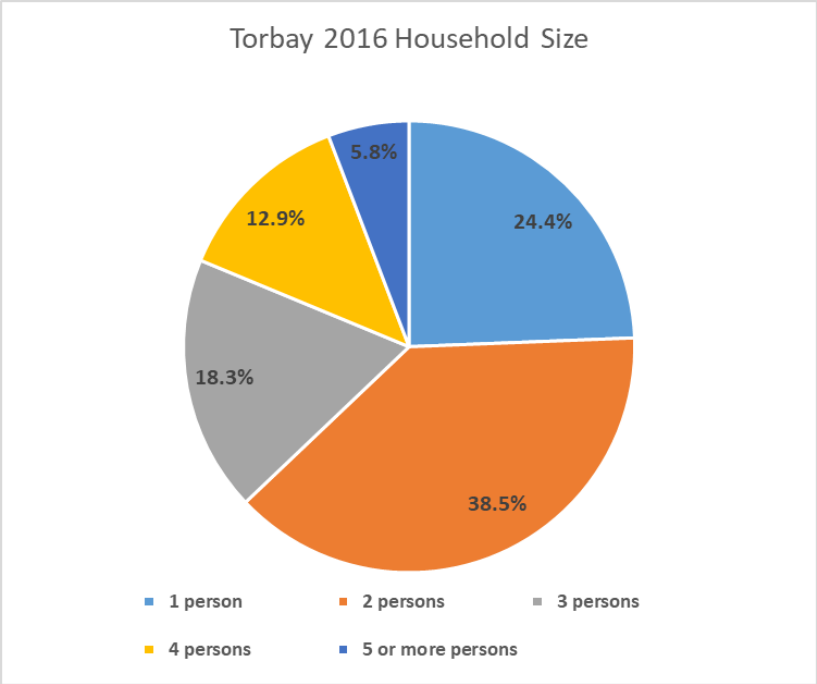

Figure 20: Torbay 2016 Household Size

Another factor when considering future demand for housing is the age of the primary household maintainer (Figure 21). For example, in 2016 435 primary household maintainers were aged 65 or older and 150 of those were age 75 older.

Given the demographic trends and potential downsizing of households any future demand for new home construction must consider existing housing stock and their potential for repurposing for smaller household sizes.

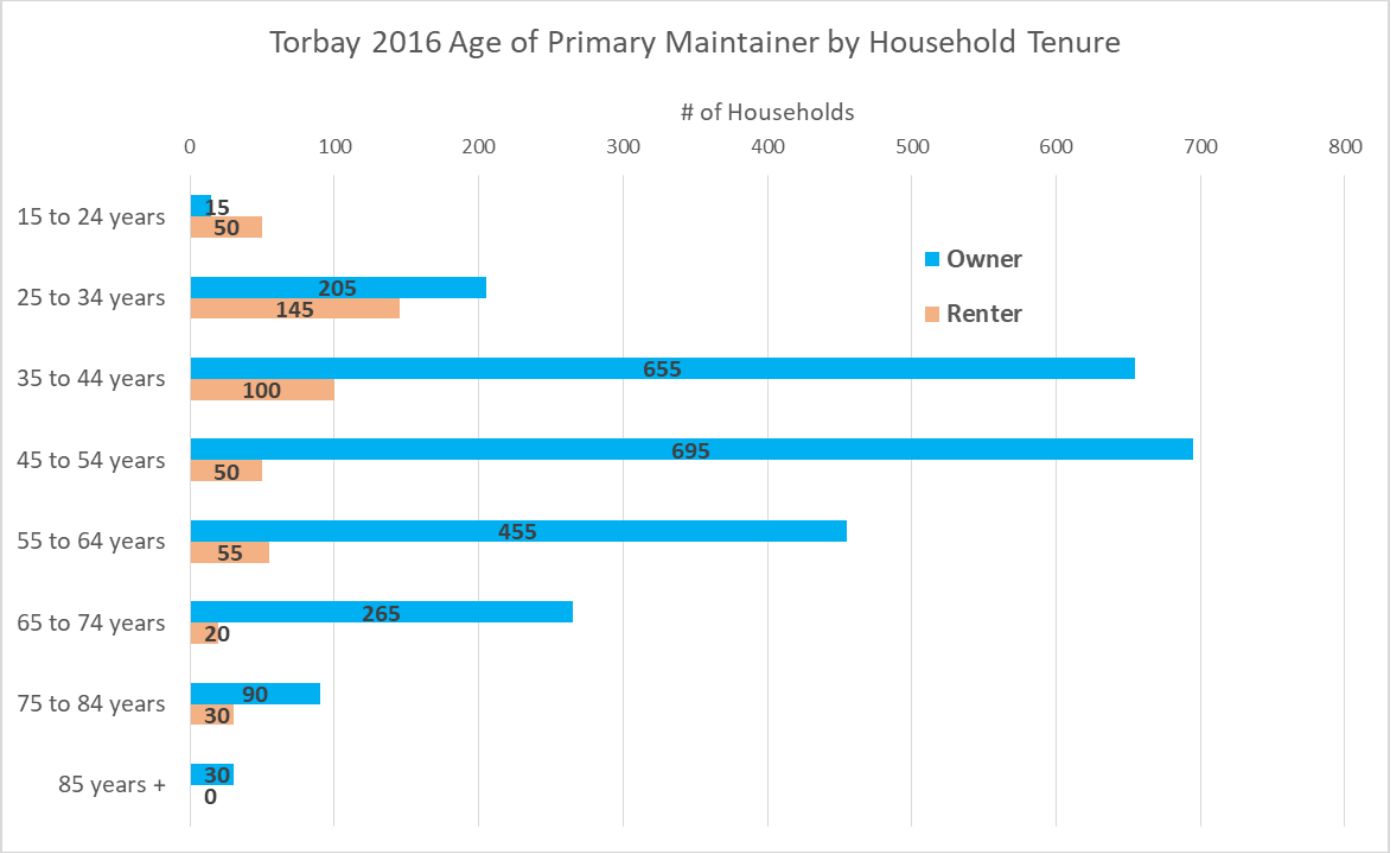

Figure 21: Torbay 2016 Age of Primary Maintainer by Household Tenure

Predicting future demand for housing is based on the historical migration demographic model as well as trends for household type in Torbay. The predicted trends for household type presented in Figure 22 indicates that there will be more demand for single family dwelling if historical demands hold true for the forecast period. Apartments and row house demand also increase but less that single detached houses.

According to the projected demands the breakdown for housing types is:

[1] 12 single detached dwellings per year,

[2] 8 apartment units per year and

[3] 3 Row house/semi-detached dwellings per year. However, the future housing demands can be met with existing housing stock and new construction.

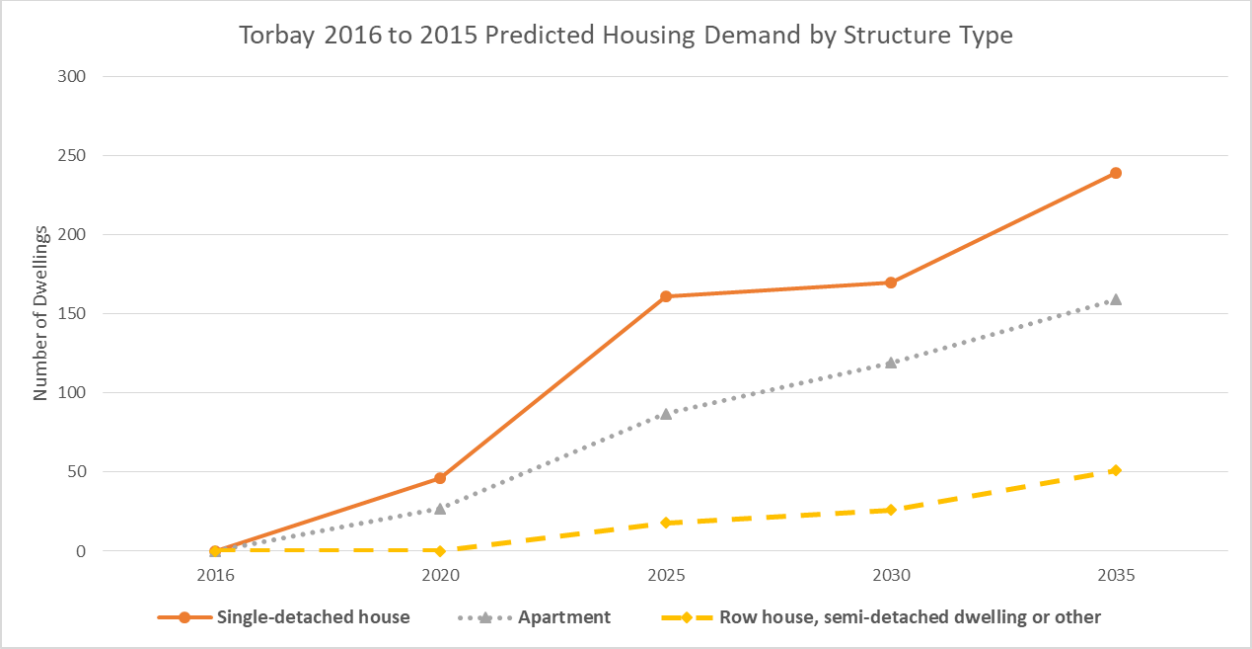

Figure 22: Torbay 2016 to 2035 Predicted Housing Demand by Structure Type

Future housing demands will have to consider the suitability of existing housing stocks to meet the shift in household sizes and whether renovating unsuitable houses is a viable option. This issue of existing stock suitability is evident by the predicted trends for household size (Figure 23) where the largest future demand is for 1 to 2 person households. If the historic trends continue to 2035 there will be a demand for: [1] 20 dwellings for 1 or 2 persons per year and [2] 4 dwellings per year for 3 or more person families.

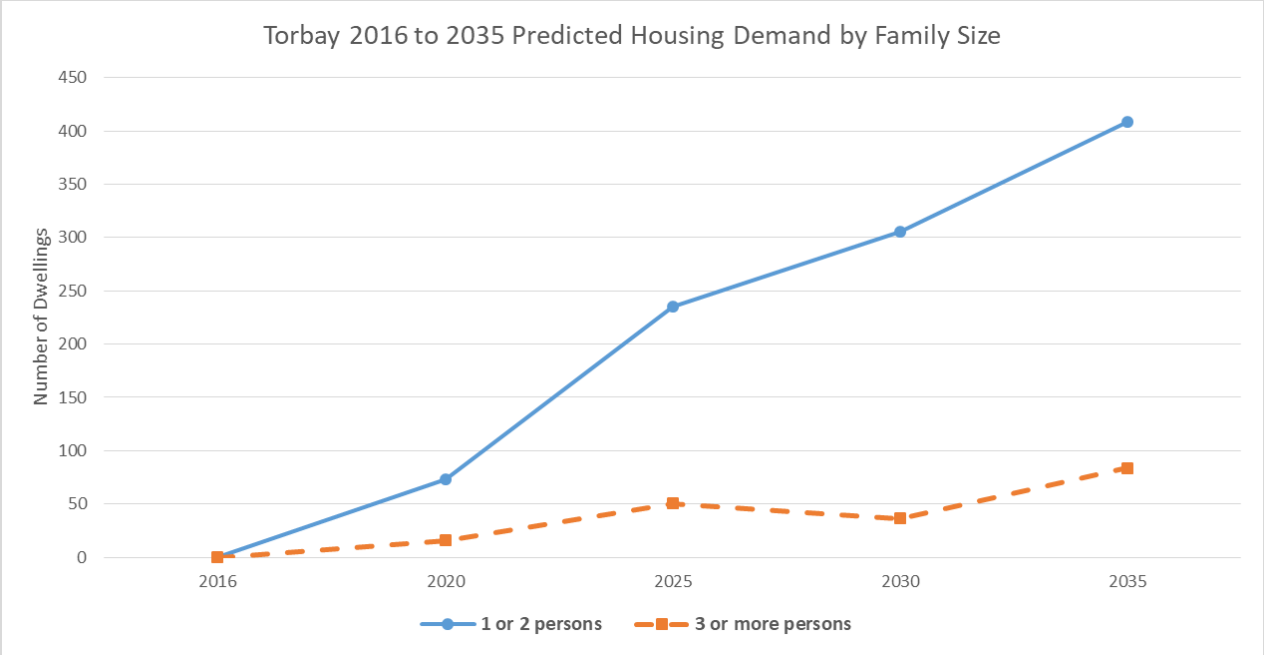

Figure 23: Torbay 2016 to 2036 Predicted Housing demand by Family Size

9.0 Spending

Consumer spending is divided into:

- Discretionary or non-essential purchases or money one can spend on dining out or other non-necessary items because it's left over after you pay your essential bills

- Non-discretionary spending[24] includes items that must be paid as required by a budget, contract, or other commitment like house insurance, child care, etc.

Growth in consumer spending is dependent on population growth, the state of the economy and increases in incomes.

- **Using the historic demographic model and incomes by age cohort it is estimated that the total income for Torbay will increase from $330 million in 2016 to $403 million by 2035 or a 21.9% increase or on average an additional $3.8 million per year.**

Note that this estimate is based on historical trends whereby the population ages and there are fewer young people within the region. More opportunities for younger workers and a population growth strategy would change the results.

If the demographic and migration trends hold where younger workers either leave the province or move from surrounding municipalities the total income for those workers aged 30 years or less will increase by 56% and 1% for the 30 to 39 age cohort. However, total income for the 40 to 54 age cohort will decrease by 22%, 55 to 64 increases by 71% and the 65+ cohort total income increases by 137% (Figure 24).

Different demographic models indicate that there is a volatility associated with estimating population trends for the young worker age cohorts such as those less than 39 years of age. Therefore, the declines must be interpreted in the context of this volatility. There is also volatility in where in the region people in all age cohorts may choose to live. In other words, this is a forecast scenario based on historical trends and there is always a possibility that policies or an expanding economy in the future would change the projected outcomes. The result should be interpreted as if historical trends continue this is what may happen.

[24] https://www12.statcan.gc.ca/census-recensement/2016/ref/dict/fam030-eng.cfm

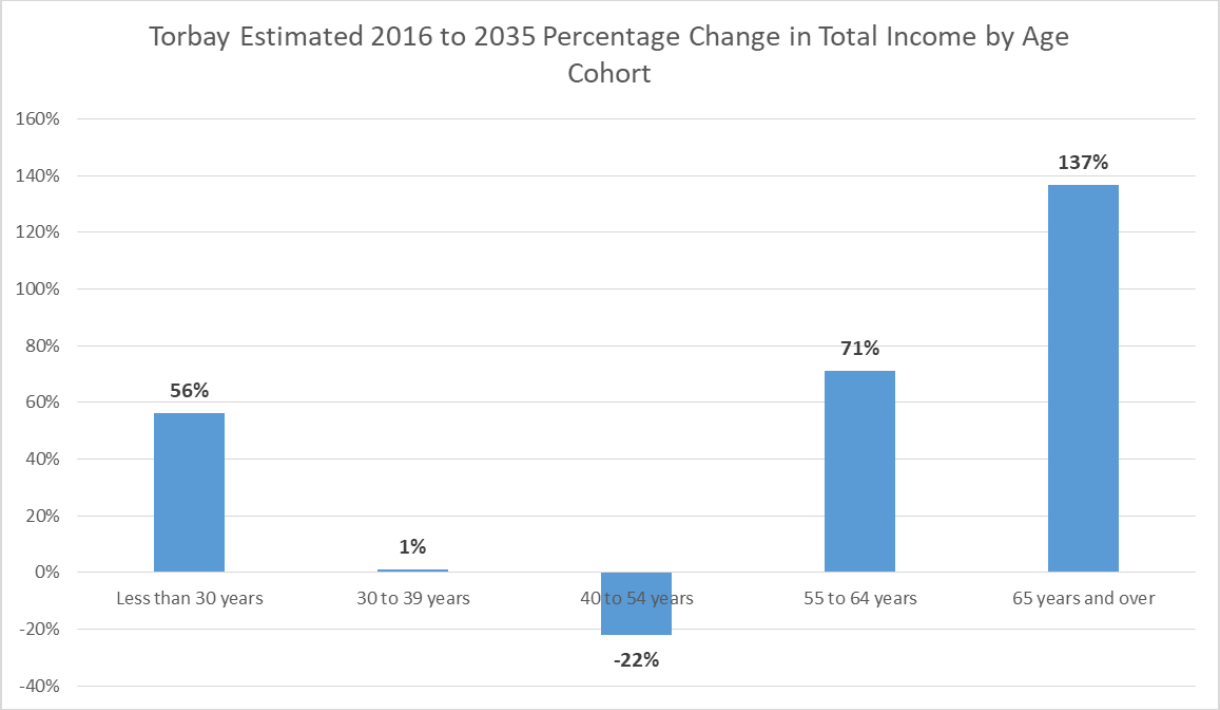

Figure 24: Torbay Estimated 2016 to 2035 Percentage Change in Total Income by Age Cohort

Note that all demographic models used in the study are consistent on the predicted increase for the 65+ age cohort and the increase in total income is more likely to occur especially because a high portion of retirement income is linked to private retirement. If the predicted growth in income holds for the 65+ age cohort there will be opportunities for businesses to provide services for this cohort.

In addition, an analysis is required to determine the overlap in services/businesses purchased or utilized by younger and older cohorts (e.g. swimming pools). This assessment of existing public services would examine capacity limits of existing facilities versus new services for the older cohorts. Similarity for businesses the response may be one of adding new items/services to their existing enterprises versus starting new ventures to meet demand.

The predicted consumer spending for 2035 is based on the historical migration demographic model and spending patterns for 2016. Overall consumer spending increases from $330 million in 2016 to $403 million by 2035. This increase in spending along with increasing incomes by 2035 results in an estimated consumer spending increase where discretionary spending increases by 23%, food purchases increase by 25%, income taxes increase by 21%, non-discretionary spending increases by 16%, shelter 22% and transportation by 23% (Figure 25). Note that these figures are 2016 dollars and are not adjusted for inflation.

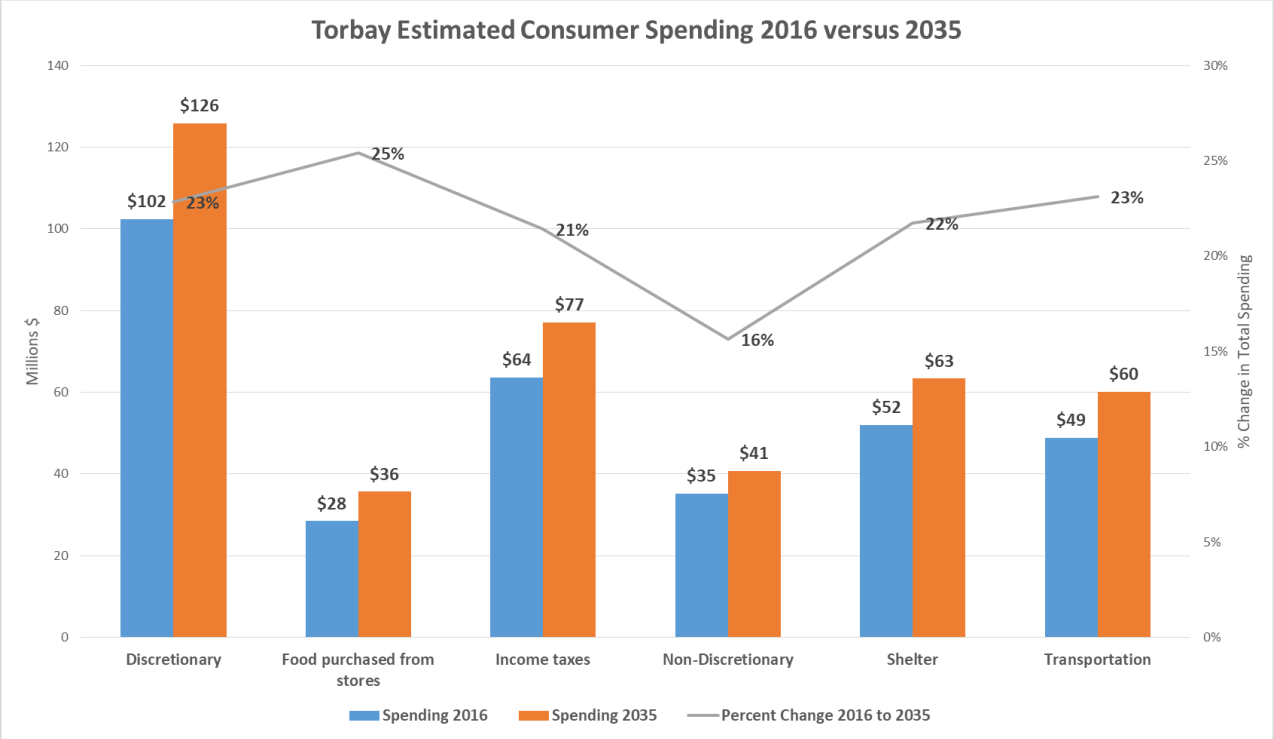

Figure 25: Torbay Estimated Consumer Spending 2016 versus 2035

Given that the 30-39 age cohort spending may increase by 1% and the 65+ cohort may increase by 137% a comparison of these cohorts spending in 2016 provides some insight how spending on select discretionary spending categories may be impacted. Note that when assessing selected discretionary spending for 2016 it is apparent that overall 30 to 39 age cohorts spend more than 65+ (Figure 26). For example, the 30 to 39 age cohort spends $3.05 million on recreation while the 65+ cohort spends $0.94. The 65+ spends more on games of chance $0.19 million versus $0.07 million for the 30 to 39 cohort.

For the selected discretionary spending categories presented in Figure 26 the 2016 total spending for the 30 to 39 cohort was approximately $12.3 million while the total spending for the 65+ cohort was $6.2 million. If 2016 spending for the 30 to 39 cohort was increased by 1% the total spending would sum to $12.4 or a marginal increase. However, if the 2016 spending for the 65+ cohort increased by 137% the spending would increase from $6.2 million to $14.7 million or a net gain of $8.5 million. It is important to measure gains and losses when examining changes over time and in this example, there would be an overall net gain of $8.6 million in consumer spending when comparing the gains and losses associated with these two age cohorts.

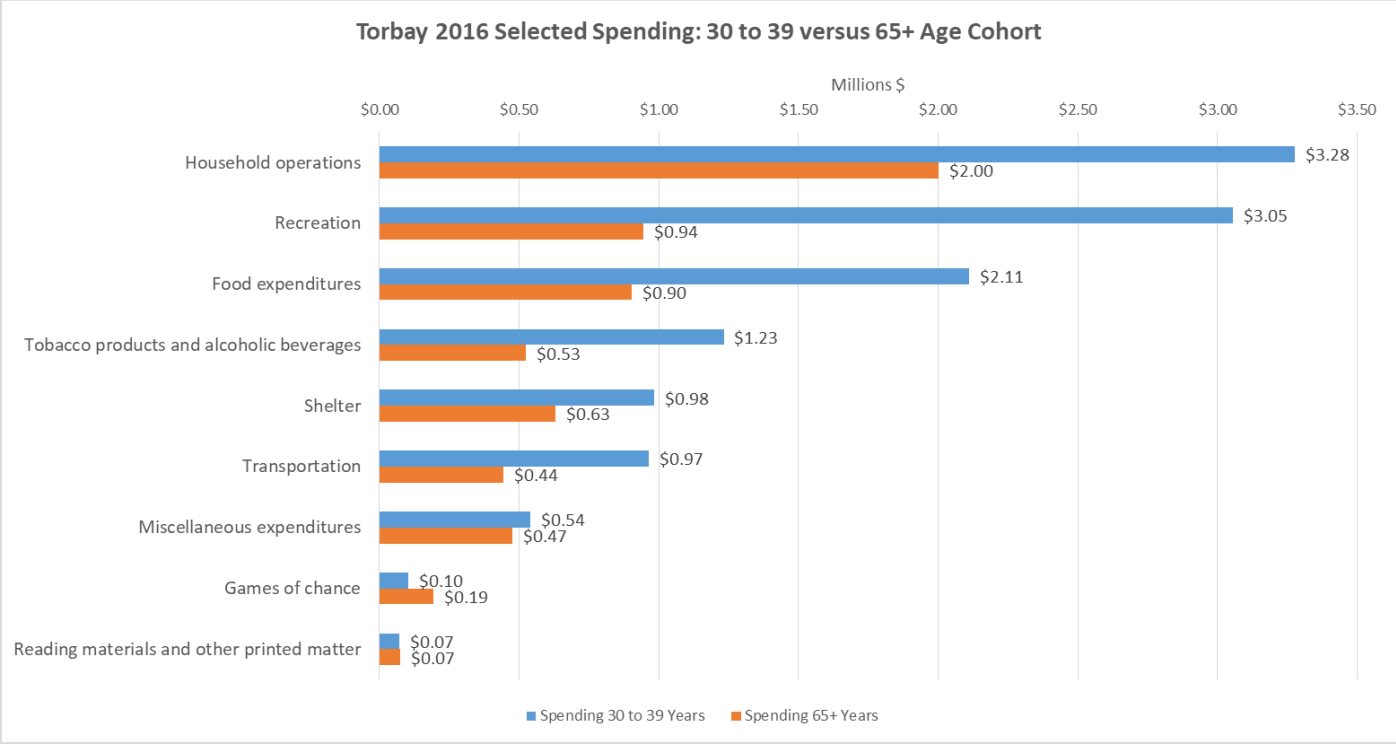

Figure 26: Torbay Selected 2016 Discretionary Consumer Spending by Age Cohorts

An analysis of discretionary spending for the study area indicates that on average 25% of the spending is linked to external travel and accommodations. The challenge associated with discretionary spending is consumer behaviour and changing the culture of current spending patterns is one of education and promotion of alternatives that benefit seniors while enhancing their lifestyle. Given that by 2035 the population of seniors in Torbay may increase by 115% it may be prudent to examine in more detail the consumer behaviour of seniors within the town as well as the region.