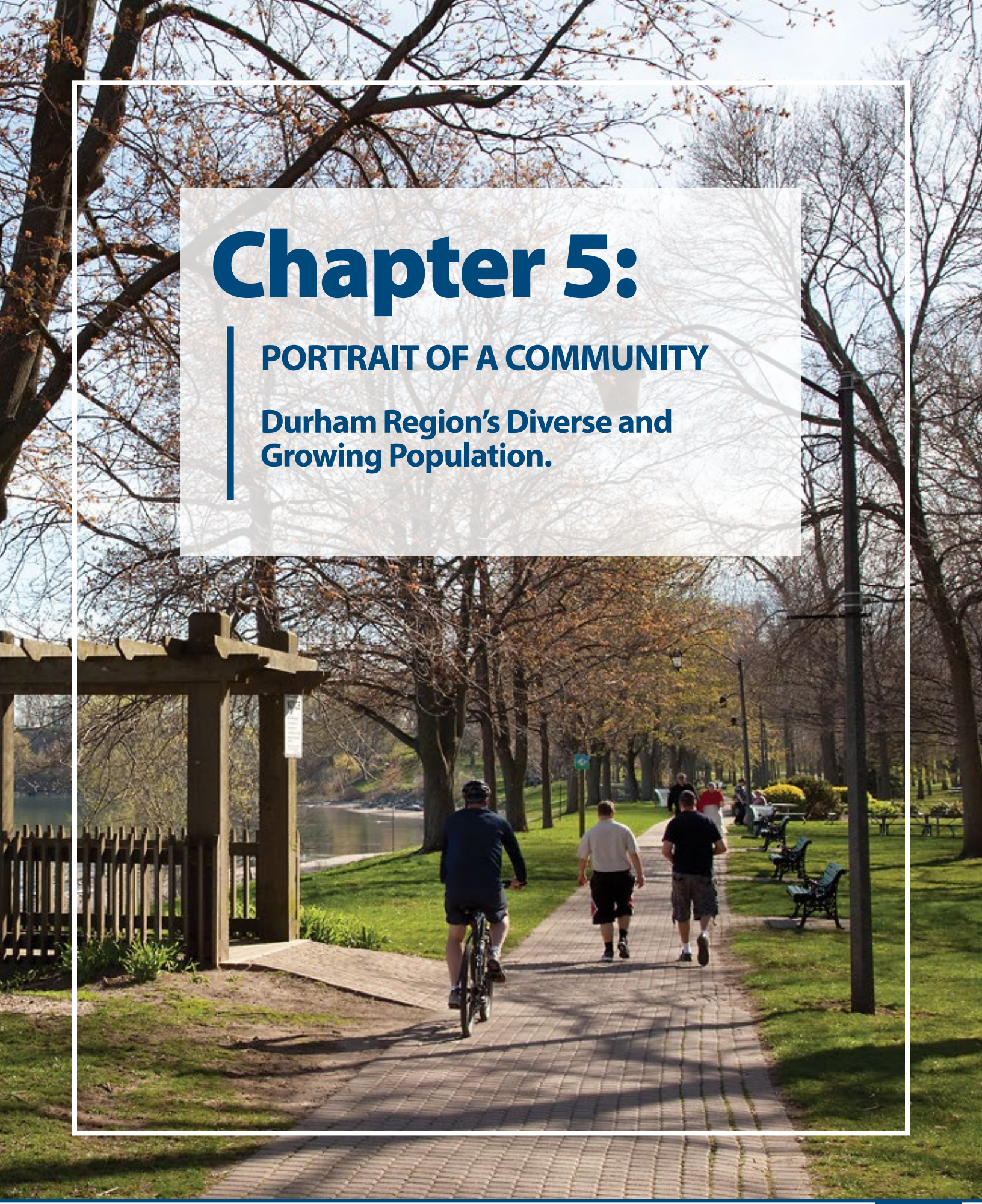


Chapter 5:

PORTRAIT OF A COMMUNITY

Durham Region's Diverse and Growing Population.

Key Messages

- **Durham Region is a vibrant, diverse, and rapidly growing community, with a population expected to reach 1.3 million by 2051, due mainly to immigration in urbanized areas.**
- **The Mississaugas of Scugog Island First Nation is located within the geographic boundaries of the Regional Municipality of Durham.**
- **Local demographic data can help to identify priority populations that face greater risks of harm from climate change than others. These include adults over age 65, children and youth, Indigenous Peoples, racialized populations, people with disabilities, people who are pregnant, residents of remote communities, individuals who are socially and economically disadvantaged, and people with pre-existing health challenges.**
- **Overall, the population of older adults age 65+ is growing four times faster than the general population. This population is more susceptible to health impacts from climate hazards such as extreme heat.**
- **One in five Durham residents live alone. While social isolation increases a person's risk of harm from climate change, very little data exists to assess this important risk factor.**
- **Recent increases in multigenerational homes in Durham may improve social supports and reduce isolation but this potential benefit is variable and context specific.**
- **Disparities in internet access may worsen existing climate related health risks in remote, rural communities.**
- **Approximately one in 10 households are experiencing financial hardship and almost one in five are experiencing food insecurity.**
- **Demand for housing exceeds supply, impacting affordable housing and an increasing demand for homelessness services.**
- **Unaffordable housing is the reality for one in four households, with rising chronic homelessness attributed mainly to high rent cost and low income.**
- **Some Durham Region residents experience multiple compounded risk factors (e.g., older age, food insecurity and isolation) and there is a need to consider intersectionality when assessing climate vulnerability.**
- **In general, Durham Region residents enjoy good physical and mental health, however, it is clear health varies by where you live.**
- **Awareness of the current and near future health risks of climate change is not well established in Durham Region. Although most residents are worried about climate change particularly for future generations, many think the impacts will not affect them personally.**

Acronyms

AWQI	Adverse drinking water quality incident
CCHVA	Climate change and health vulnerability assessment
CI	Confidence interval
CSWB	Community safety and well-being
CVD	Cardiovascular disease
DASH	Durham Access to Social Housing
DRHD	Durham Region Health Department
DWAs	Drinking water advisories
EDOH	Ecological determinants of health
GTA	Greater Toronto Area
ISPs	Internet service providers
MSIFN	Mississaugas of Scugog Island First Nation
NOS	National Occupancy Standard
OHIP	Ontario Health Insurance Plan
RRFSS	Rapid Risk Factor Surveillance System
SDWS	Small drinking water system
VAW	Violence against women

Terms & Definitions

Adaptation

The process of modifying our decisions, activities, and ways of thinking to be proactive and better prepared, as well as reactive and better able to respond to a changing climate and its impacts on health. [1] There are two main types of adaptation, anticipatory (before an event) and institutional (after an event).

By-Name List

A real-time list of people known to be experiencing homelessness and a co-ordinated access system that enables community partners to prioritize and work more effectively with this population.

Census Family

Statistics Canada defines a "census family" as "couples living together, with or without children, and lone parents living with their children". [2]

Core Housing Need

Core housing need refers to whether a private household's housing falls below at least one of the indicator thresholds for housing adequacy, affordability, or suitability, and would have to spend 30 per cent or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable (attains all three housing indicator thresholds).

Ecological Determinants of Health (EDOH)

Also referred to as ecosystem services, or nature's contributions to people. These are the services (both material and non-material) nature provides us that we are dependent on for our survival and well-being.

Functional Zero

This term applies to homelessness. Functional zero means that a community has no more than three people experiencing chronic homelessness on its By-Name List, or 0.1 per cent of its most actively homeless number (whichever is greater) sustained for three consecutive months. [3]

Food Insecurity

This refers to the inability to acquire or consume an adequate quality or quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so. Household food insecurity is often linked with the household's financial ability to access adequate food. [4]

Health Neighbourhoods

Durham Region has 50 Health Neighbourhoods and tracks 96 indicators to better understand the demographics and health of Durham communities.

Hidden Homelessness

Refers to people who live temporarily with others with no assurance that they will be able to stay there in the future and have no immediate prospect of finding permanent housing. [5]

Homelessness

The Canadian definition of homelessness includes an individual or family that is without appropriate, permanent, safe, and/or stable housing; without the immediate prospect of housing; and/or without the ability or means of acquiring housing. The lack of housing is the result of societal or systemic barriers; lack of affordable or appropriate housing; the individual or household's behavioural, cognitive, mental, physical, and/or financial challenges; and/or racism and discrimination. [5]

Household

A household refers to a person, or group of people who live together in the same dwelling and do not have a usual place of residence elsewhere in Canada or abroad. The dwelling in which the household lives may be either a collective dwelling or a private dwelling.

Housing Suitability

This refers to whether a private household is living in suitable accommodations according to the National Occupancy Standard (NOS); that is, whether the dwelling has enough bedrooms for the size and composition of the household. A household is deemed to be living in suitable accommodations if its dwelling has enough bedrooms, as calculated using the NOS.

Immigrant

This term is used when referring to Canadian census data on immigrants and includes non-permanent residents as well.

According to Statistics Canada, an "immigrant" refers to a person who is or has been a landed immigrant or permanent resident. A non-permanent resident refers to a person from another country with a usual place of residence in Canada and who has a work or study permit or who has claimed refugee status (asylum claimant).

Inadequate Housing

Refers to homes that need major repairs. This includes dwellings with defective plumbing or electrical wiring, inadequate temperature control and those needing structural repairs to walls, floors, or ceilings.

Life expectancy

How many years a newborn is likely to live based on the current mortality rate.

Loneliness

Is the pain we feel when our social connections do not meet our needs. It can be described as a subjective, complex emotion experienced by a person as an unpleasant feeling of lack of connectedness or community with others due to a discrepancy between their desired and actual social relationships. [6]

Low-Density Housing

This refers to single or semi-detached homes.

Point-In-Time (Pit) Counts

The PiT Count is a coordinated data collection strategy that counts the number of people experiencing homelessness in a region within a 24-hour period. [5] It provides an estimated snapshot of a region's extent and nature of homelessness. [7] The Count collects data on the number of individuals and families experiencing homelessness, as well as their demographics and service needs. The Count is completed in 24 hours to reduce duplication and be as cost and resource effective as possible. The Count is scheduled for a time when most people are likely to be off the streets if they have somewhere else to go, and when most people are likely to be settled in where they intend to spend the night.

PiT Count has some methodological limitations, which should be noted. It does not fully capture those who are experiencing 'hidden homelessness', such as couch surfing or staying in a motel room. [5]

PIT counts are also referred to as "Street Counts", "Homeless Counts", or "Street Needs Assessments".

Premature Mortality

Premature mortality is a measure of unfulfilled life expectancy and refers to deaths that occur before the age of 75. Since the deaths of younger people are often preventable, the premature mortality rate is a measure that gives more weight to the death of younger people than older people.

Racialized

In this report, the term "racialized" is used instead of the more commonly used term "visible minority" which based on Statistic Canada's definition refers to "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour". [8] The term racialized is preferred because it acknowledges the fact that the barriers racialized people face are rooted in the historical and contemporary racial prejudice of society and are not a product of their own identities or shortcomings. [9]

Rapid Risk Factor Surveillance System (RRFSS)

RRFSS is an online and telephone survey that collects health-related behaviour data among Ontario adults 18-years and older. These data provide important information that helps support PHUs in planning and evaluating local programs and services, and informing education, awareness and advocacy efforts related to health behaviours.

Sheltered

In the context of homelessness, sheltered includes people sleeping in the following locations: emergency shelters, extreme weather shelters, violence against women (VAW) shelters, or provided with hotel vouchers in lieu of shelter beds.

Social Isolation

This refers to people who are living alone without support and/or are too far away from services and supports. Social isolation is the state of having a smaller number of social contacts, which may contribute to loneliness.

Transitionally Sheltered

This includes people who are staying in transitional facilities that provide longer stays than emergency shelters but are not permanent housing interventions. [5]

Water Security

The United Nations defines water security as "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against waterborne-pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability". [10]

Unaffordable Housing

The share of household income spent on shelter costs is known as the shelter-cost-to-income ratio; a threshold of 30 per cent is acceptable as the upper limit for defining affordable housing in Canada. Housing is considered unaffordable if greater than 30 per cent of household income is spent on it.

Unsheltered

This term is used in the context of homelessness. It includes people who are sleeping in places unfit for human habitation. This includes the following locations: streets, alleys, parks and other public locations, transit stations, abandoned buildings, vehicles, ravines, encampments, and other outdoor locations where people experiencing homelessness are known to sleep. [5]

Unsuitable Housing

Refers to households that do not have the required number of bedrooms as measured by the National Occupancy Standard, based on the age, sex, and relationships among household members.

Urbanization

The increase in the proportion of a population living in urban areas; the process by which many people become permanently concentrated in relatively small areas, forming cities.

Chapter 5

DURHAM'S COMMUNITY

An overview of Durham Region's diverse and vibrant population.

This chapter provides a sociodemographic overview of Durham Region's communities, as well as a summary of several measures of health and well-being. It serves as a comprehensive reference guide on key demographic, social, economic and health and well-being trends in the Region that influence our community's resilience and vulnerabilities to climate change. Important data gaps are also identified when appropriate.

5.1 Demographic and Socioeconomic Trends

Assessing demographic and socioeconomic trends are important for understanding current and future climate-related health risks.

Demographic and socioeconomic data help to identify community characteristics and health inequalities associated with climate vulnerability. [11] For example, health and income disparities can influence exposure, sensitivity and ability to adapt to climate hazards such as extreme heat, food insecurity and flooding. [11, 12] The following sections explore trends in Durham Region that are relevant to the understanding current and future health impacts of climate change.

5.1.1 Population Growth

Durham Region's population is quickly growing and is expected to reach 1.3 million residents by 2051.

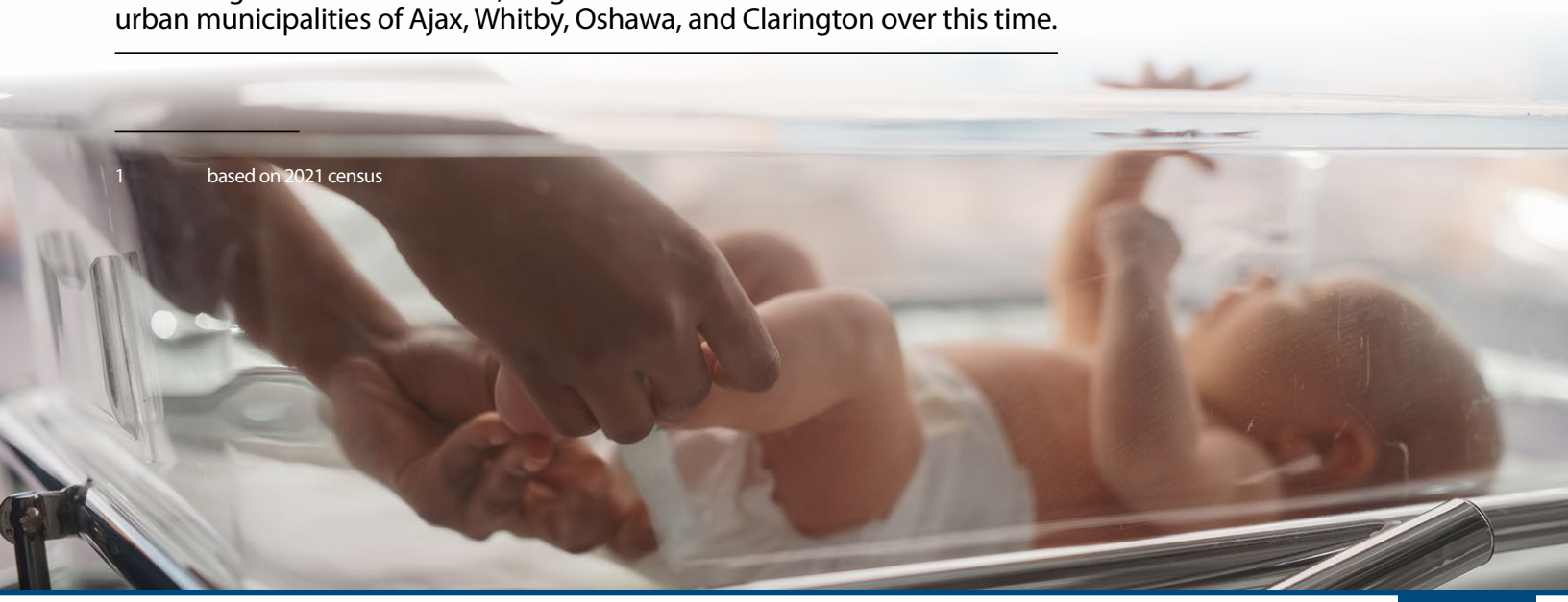
The two key components of population growth are natural increases (births minus deaths) and net migration (in-migration minus out-migration). Changes in population growth can lead to substantial changes in demographic patterns, such as age structure. [13, 14]

Durham Region is currently home to 696,992[1] residents, with a population density of 276.5 people/km2. From 2016 to 2021, Durham's population increased by almost eight per cent. [15]

5.1.1.1 Natural Increases: Birth Rate

Overall, the birth rate in Durham Region is stable and is not contributing substantially to population growth in the region.

In 2021, there were 7,591 newborns born to Durham Region residents, representing more than 10 live births for every 1,000 residents. This birth rate has not changed noticeably from 2013 to 2021 (**Figure 5.1**) for the region overall. However, a significant decrease in crude birthrates were observed in the southern urban municipalities of Ajax, Whitby, Oshawa, and Clarington over this time.



1 based on 2021 census

Birth Rate

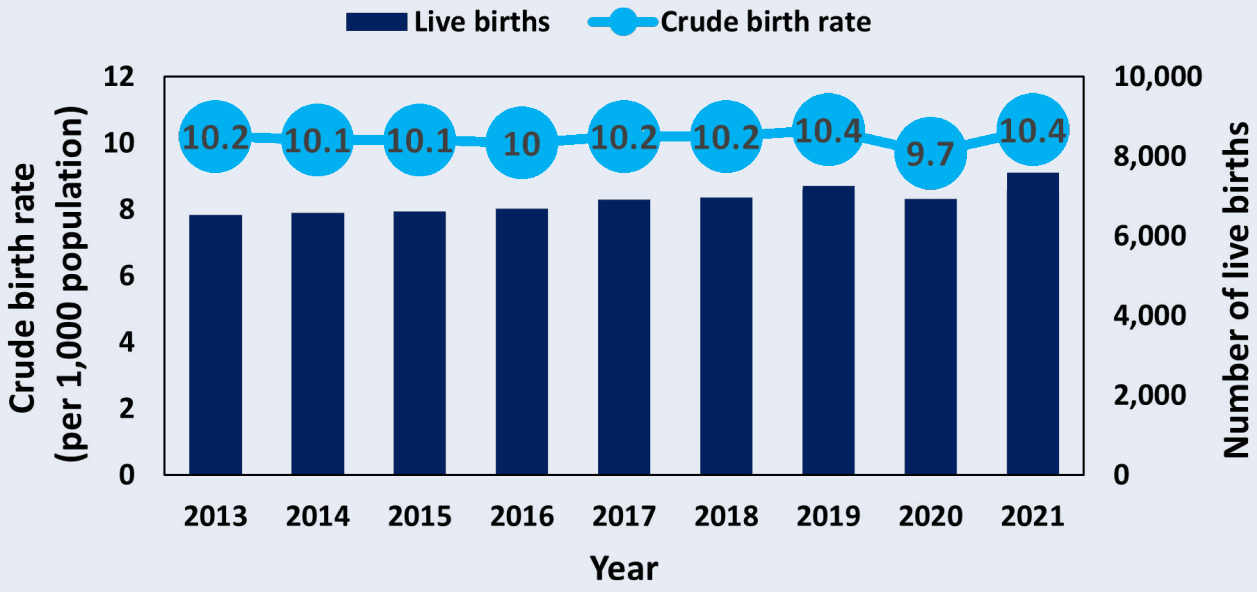


Figure 5.1 | Crude birth rate and number of live births for Durham Region, 2013 to 2021.

Crude birth rate reflects the total number of live births per 1,000 population. Stillbirths are not included in this estimate.

Data source: *(1) Public Health Unit Analytic Reporting Tool (Cube), BORN Information System, BORN Ontario. Data extracted on 2022-11-10. (2) Population Estimates, IntelliHealth Ontario. Ontario Ministry of Health. Data extracted on 2022-08-02. Note: Data from First Nations communities are not included in the BORN public health data cube. To honour First Nations Ownership, Control, Access, and Possession (OCAP) principles, BORN Ontario has removed all records from the BORN data cube with postal codes that are linked to First Nations communities.*

5.1.1.2 Natural Increases: Mortality

Durham Region residents are fortunate to have a long-life expectancy, which is contributing to Durham's aging population.

Improvements in life expectancy and premature mortality rates can support population growth by decreasing the mortality rates within a population. Durham Region residents generally have a long-life expectancy and relatively low premature mortality rates (**Table 5.1**). However, clear socioeconomic gradients are observed across life expectancy and mortality indicators among Durham Region's population (**Table 5.1**; Municipal estimates: **Appendix 5.1** - **Tables A5.1.1** & **A5.1.4**).

Table 5.1 | Average life expectancy at birth and premature mortality for Durham Region males.

LONGEVITY MEASURES	MALES		FEMALES	
	Durham Region	Municipal range	Durham Region	Municipal range
Life expectancy at birth[2] (2014 to 2018)	79.7 years	74.8 to 81.0 years	83.0 years	79.3 to 85.2 years
Age-standardized premature mortality rate[3] (2012 to 2016)	14.7 per 1,000	11.6 to 20.1 per 1,000	10.4 per 1,000	8.1 to 14.0 per 1,000

2 Life expectancy at birth refers to how many years a newborn is likely to live based on the current mortality rate.

3 Premature mortality is calculated as the number of premature deaths in males or females aged 0 to 74, per 1,000 males or females in that age group. Premature deaths are those that occur before the age of 75. This rate was age-standardized using the 2011 Canadian Census population.

Municipal range refers to the lowest and highest values among all Durham's municipalities.

Data source: Life expectancy (Deaths, 2014-2018, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario & 2016 Canadian Census, Statistics Canada). Premature mortality rate (Booth G, Homenauth E, Graves E, Ishiguro I, Jovanovska S. Indicators for Durham Region Health Neighbourhoods – Update, Applied Health Research Questions (AHRQ) 2019 0900 784 001. Toronto: Institute for Clinical Evaluative Sciences; 2019).

An Aging Population

Durham Region's population is aging, and older adults are living longer and healthier than previous generations thanks to rapid advancements in healthcare.

Natural increases in the population, as well as immigration, can have substantial impacts on the demographics within a community, including age structure. **Figure 5.2** illustrates the age structure within Durham Region, based on data from the 2021 census. Based on these data, the following trends were identified: [16]

- Children under 15-years old comprised 18 per cent of Durham Region's population, which is higher than Canada (16.3%).
- Adults 30 to 64-years old accounted for almost half (47.8%) of Durham Region's population. This is higher than both the national and provincial levels of 46.8 per cent.
- Older adults, 65 and older, accounted for 15.9 per cent of Durham Region's population. This is lower than both Canada (19%) and Ontario (18.5%).

Birth Rate

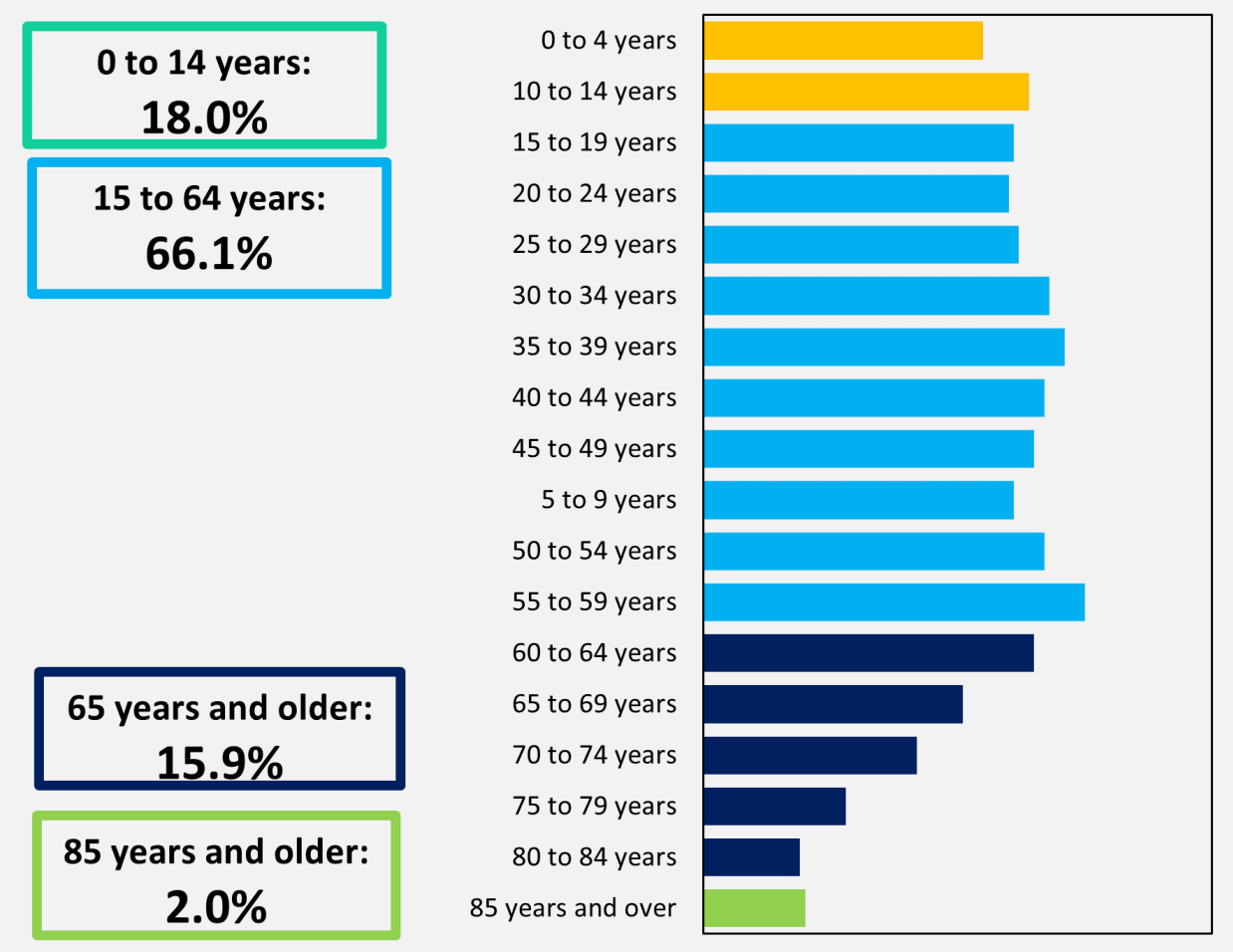


Figure 5.2 | 2021 Population pyramid for Durham Region in 2021 by age group.

Data source: Statistics Canada, 2021 Census of Population. [16]

Durham Region's older adult population, 65 and older, was the only age category in the region to experience noticeable growth from 2011 to 2021 [16], regardless of the heartbreaking toll the COVID-19 pandemic had on this population (**Figure 5.3**; Municipal estimates for 2016 to 2021 growth rate: **Appendix 5.1 – Table A5.1.3**).

Older Adults, 65+

Durham average	65 years and older
7.9 %	25.9 %

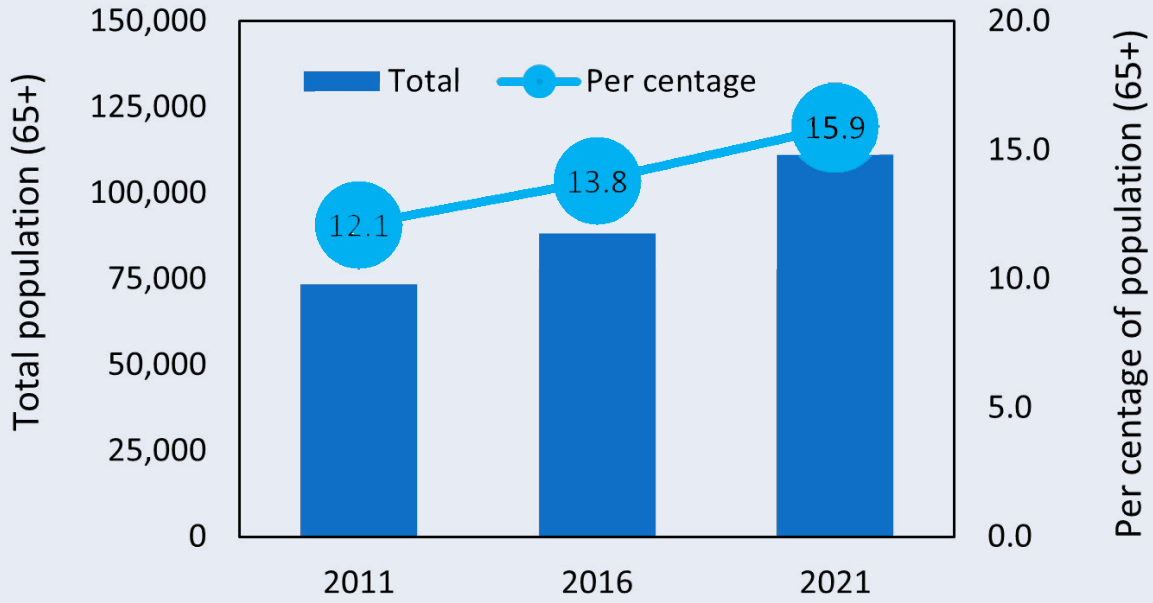


Figure 5.3 | Total and per cent population aged 65 years and older (2011 to 2021) and population growth (2016 to 2021) in Durham Region.

Data source: Statistics Canada, 2021, 2016 & 2011 Census of Population.

This population is growing exceedingly fast – approximately four times more rapidly than Durham Region's general population **(Figure 5.3**). As with other demographic trends, growth in the older adult population has not been consistent across the region. In general, the urban municipalities are aging more quickly than rural areas (**Appendix 5.1-Table A5.1.3**).

5.1.1.3 Immigration

Immigration is a significant source of population growth in the region, accounting for nearly two-thirds of growth in the past five years. [17]

Within the past five years, approximately 36.4 per cent of Durham Region residents moved (migrated), which similar to the Ontario average of 37.4 per cent. Of the 36.4 per cent of residents that had moved, 9.9 per cent moved within Durham Region, and 26.5 percent immigrated from outside of Durham (**Figure 5.4**).

RECENT MOVERS

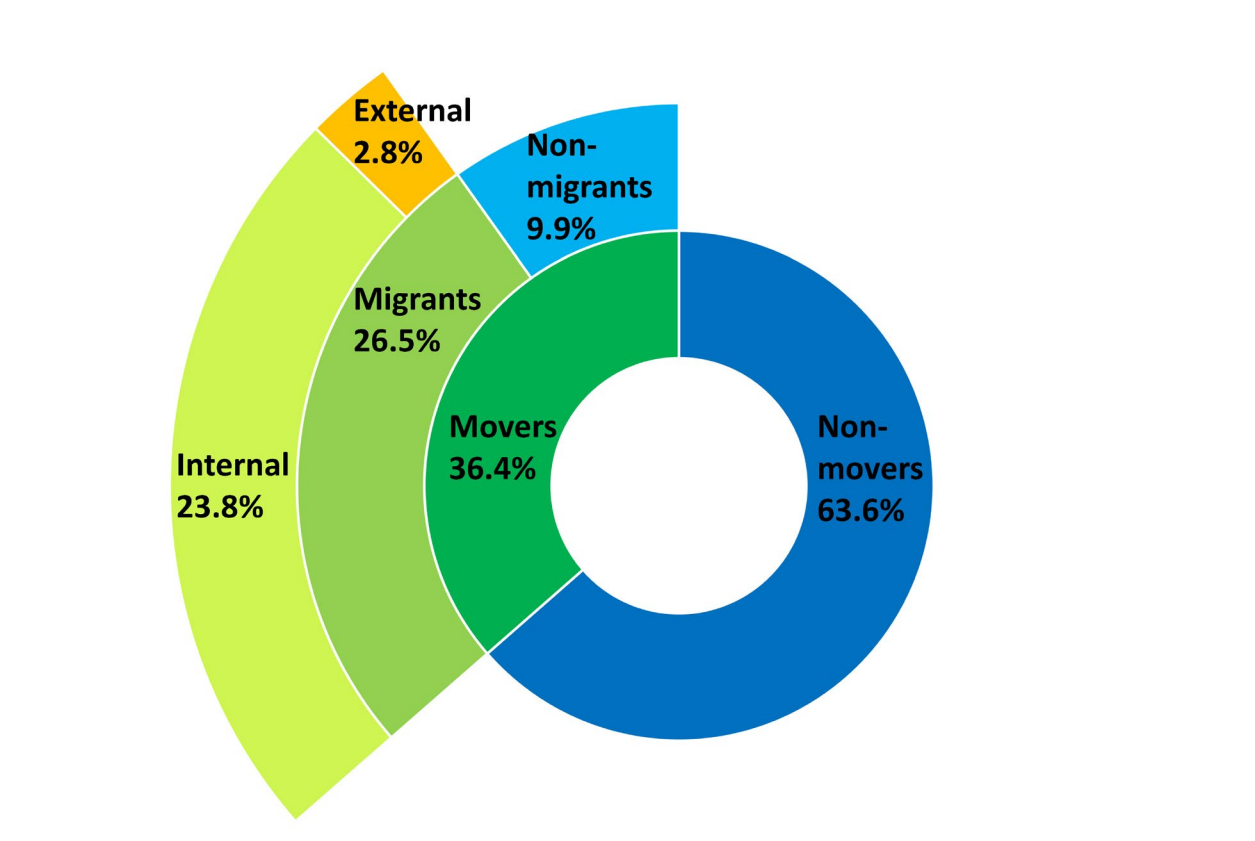


Figure 5.4 | Durham Region residents who moved homes between 2016 and 2020.

People who have not moved are referred to as non-movers and movers who have moved from one residence to another are referred to as movers.

Movers include non-migrants and migrants.

Non-migrants are people who moved within Durham Region. Migrants include internal migrants who moved to a different home within Canada. External migrants include people who lived outside of Canada at the earlier reference date.

Data source: Statistics Canada, 2021 Census of Population. [16]

Figure 5.5 highlights the growth in the population of people who have immigrated to Durham Region since 2001. Although Statistics Canada refers to this population as immigrants [4], in this report we use the term newcomers.

c Based on Statistics Canada's definition, "Immigrant" refers to Canadian census data on immigrants and non-permanent residents.

Newcomers To Durham

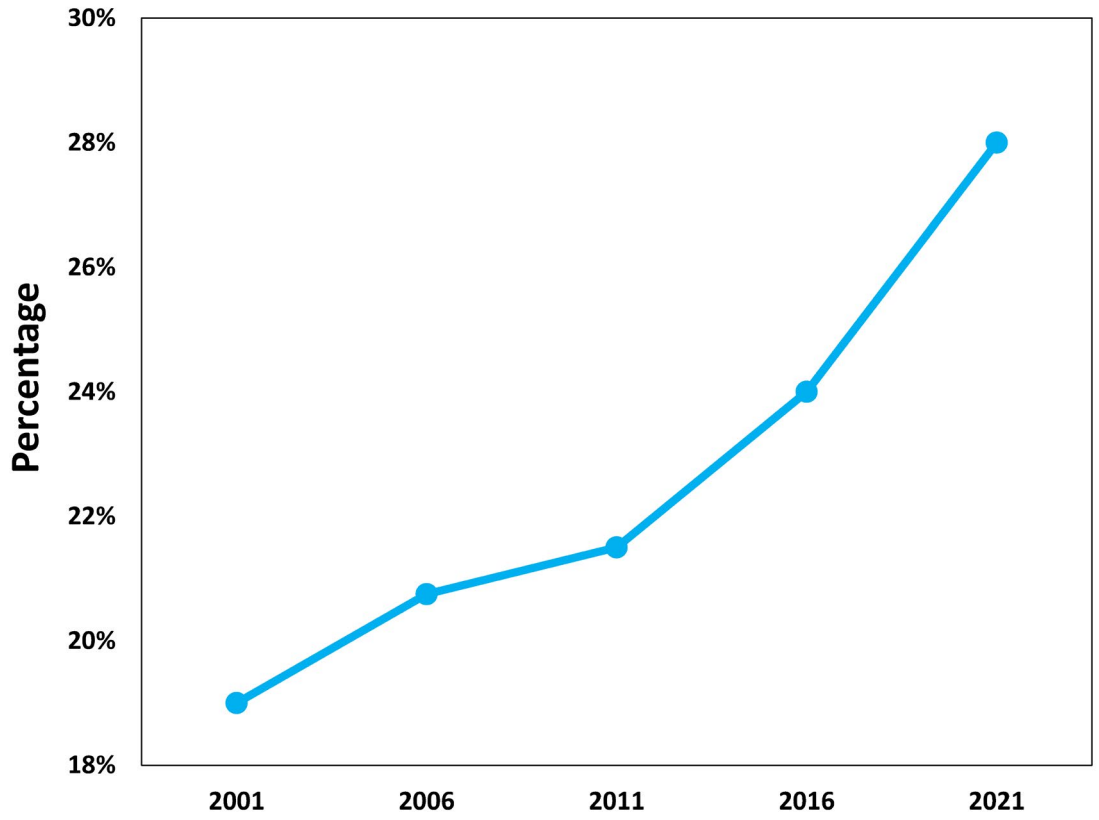


Figure 5.5 | Growth in the number of newcomers making Durham Region their home as a percentage of the total population, 2001 to 2021.

This includes immigrants and non-permanent residents.

Figure adapted from The Regional Municipality of Durham Information Report #2022-INFO-102. [17]

From 1980 to 2021 almost half (46.9 per cent) of newcomers arrived in Durham Region under the "economic" admission category and over one-third (35.3%) were sponsored by family. (**Figure 5.6**) Almost two-thirds (62.7%) immigrated when they were 15 to 45-years old, and only 7.1 per cent, approximately, immigrated as older adults (45 and older) (**Figure 5.6**). This makes sense considering most people immigrate to Durham Region for economic reasons. Additionally, although immigration is a substantial contributing factor to the Region's population growth, it currently does not have a substantial impact on the recent growth seen in the older adult (65 and older) population.

Many newcomers moved from countries within Asia (70.1%), many of whom were from India (33.9%) (**Figure 5.6**). Approximately 96.8 per cent of newcomers to Durham Region have chosen to settle in the urban municipalities located in the southern parts of the region along the lakeshore including, Whitby, Ajax, Oshawa, Clarington, and Pickering (**Appendix 5.1 – Figure A5.1.3**). [16]

Immigration Experience

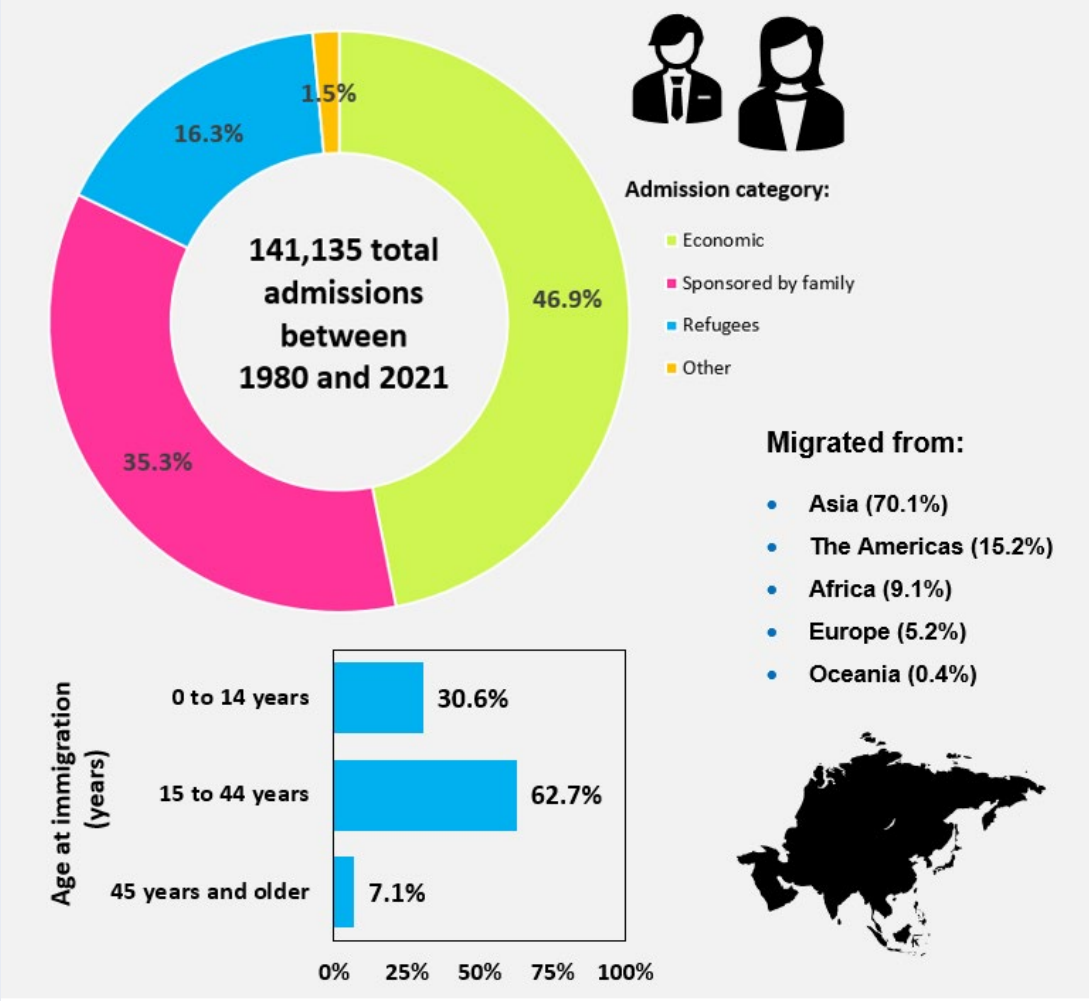


Figure 5.6 | Admission category, country of origin and age at immigration for newcomers that arrived in Durham Region between 1980 and 2021.

"Economic immigrants" incudes immigrants who have been selected for their ability to contribute to Canada's economy through their ability to meet labour market needs, to own and manage or to build a business, to make a substantial investment, to create their own employment or to meet specific provincial or territorial labour market needs.

"Immigrants sponsored by family" includes immigrants who were sponsored by a Canadian citizen or permanent resident and were granted permanent resident status based on their relationship either as the spouse, partner, parent, grandparent, child, or other relative of this sponsor.

"Refugees" includes immigrants who were granted permanent resident status based on a well-founded fear of returning to their home country.

"Other immigrants" includes immigrants who were granted permanent resident status under a program that does not fall under the other three categories.

Data source: Statistics Canada, 2021 Census of Population. [16]

5.1.1.4 Urbanization

Most Durham Region residents (92 per cent) reside in the southern lakeshore communities of Pickering, Ajax, Whitby, Oshawa, and Clarington (Figure 5.7).

These communities have experienced the highest rates of population growth over the past 20 years and this growth is projected to continue, especially in Pickering, with the development of the Seaton community (**Appendix 5.1 – Figure A5.1.2**). Growth in these areas is not due to increased birth rates, as crude birth rates have slightly declined in these municipalities over recent years. Instead, growth is predominantly driven by immigration, as newcomers most frequently choose to settle in the large urban centers (**Figure A5.1.3**). In comparison, the rural communities of Brock, Scugog and Uxbridge have seen much slower rates of growth (**Figure A5.1.2**).

MUNICIPAL POPULATION DISTRIBUTION

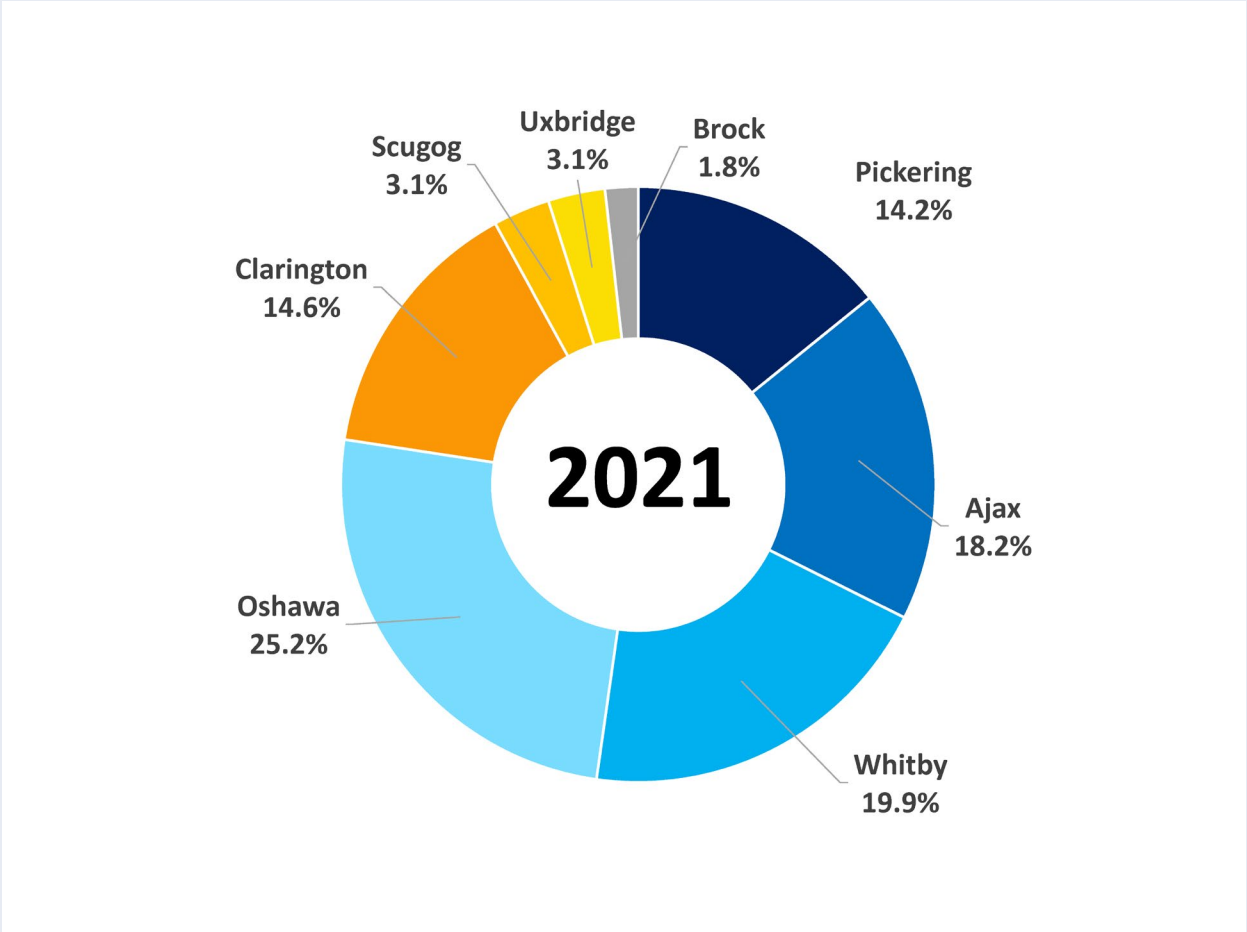


Figure 5.7 | Population distribution among each of Durham Region's area municipalities in 2021.

Figure adapted from The Regional Municipality of Durham Information Report #2022-INFO-31 [49]

5.1.2 Ethnic and Cultural Origins

5.1.2.1 Indigenous Peoples in Durham Region

The ancestral and treaty territory of the Mississauga Nation encompasses the entirety of the Regional Municipality of Durham.

The Mississauga Nation is a branch of the Ojibway of the Three Fires Confederacy, who moved southward from the Sault Ste. Marie area around 1695 and settled into communities at the mouth of the Credit River, on the shores of Rice Lake, Mud Lake and Lake Scugog.

The Mississaugas of Scugog Island First Nation (MSIFN) is located within the geographic boundaries of the Regional Municipality of Durham. Durham Region is also home to a large and diverse urban Indigenous population, which includes individuals who are members of the Métis, Inuit, Haudenosaunee, and other Indigenous Nations.

At least 2 per cent of people living in Durham Region identify with one or more Indigenous Nations.

In 2021, a total of 13,795 persons in Durham (2% of the population) reported to identify with at least one Indigenous Nation (i.e., First Nations, Métis, or Inuit). Approximately 19,300 persons in Durham (2.8% of the population) reported they have Indigenous ancestry, with 0.5% (3,530 persons) indicating multiple Indigenous ancestry identifying as either First Nations, Métis, or Inuit; and 2.3% (15,770 persons) indicating multiple ancestries that include both Indigenous and non-Indigenous origins. [16]

5.1.2.2 Ethnic and Cultural Diversity in Durham Region

Durham Region is home to a steadily growing diverse population.

The proportion of Durham's population that identify as belonging to a "visible minority" [5]group increased consistently from 2011 to 2021. [17] The largest groups of visible minorities in Durham Region include South Asian (13.4%), Black (9.6%), Filipino (2.9%), and Chinese (2.4%) (**Figure 5.8**). The proportion varies substantially across Durham Region's municipalities (range: 4.7 to 64.6%) with the highest proportion of racialized people in the southern municipalities, and the lowest proportion in the northern municipalities (**Appendix 5.1 – Table A5.1.4**). [16]

5 In this report we use the term "racialized people", Statistics Canada uses the term "visible minorities", which refers to "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour", as defined by the Employment Equity Act. [8]

At least 2% of people living in Durham Region identify with one or more Indigenous Nations.

Racialized People In Durham Region

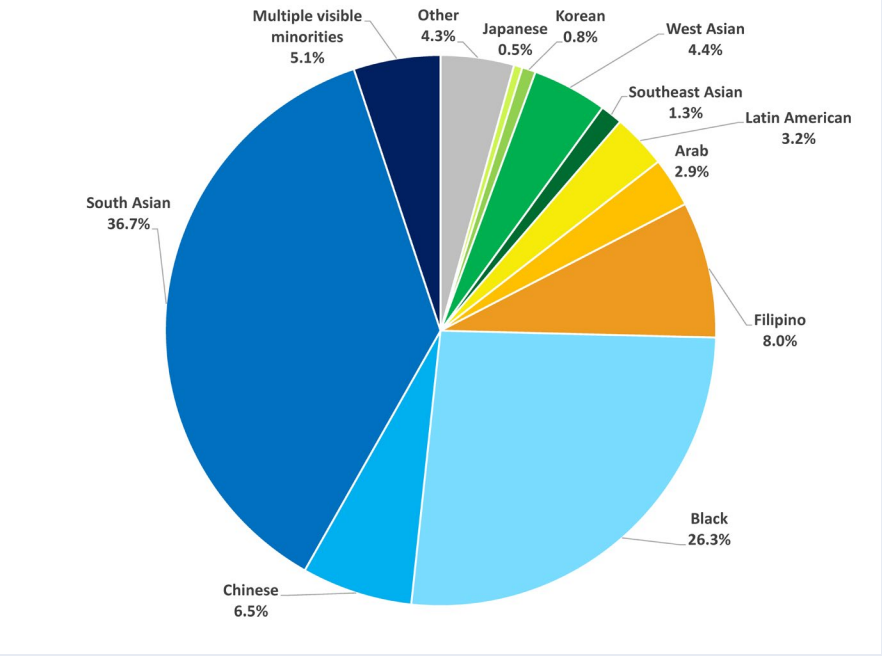


Figure 5.8 | Census breakdown of racialized people in Durham Region, 2021.

The ethnic groups selected are the most frequently reported at the Canada level.

The sum of the ethnic or cultural origins in this graph is greater than the total population estimate because a person may report more than one ethnic or cultural origin in the census.

Figure adapted from The Regional Municipality of Durham Information Report #2022-INFO-31. [49] Data source: Statistics Canada, 2021 Census of Population. [16]

In 2021, most of Durham Region's population reported having ethnic origins[6] , of European (96.4%) and North American (27.7%) descents. Other notable ethnic origin groups in the Region included Asian (29.2 %) and South American (7.6%).

6 Ethnic or cultural origin refers to the ethnic or cultural origins of the person's ancestors. Ancestors may have Indigenous origins, origins that refer to different countries or other origins that may not refer to different countries. For more information on ethnic or cultural origin variables, including information on their classifications, the questions from which they are derived, data quality and their comparability with other sources of data, please refer to the Ethnic or Cultural Origin Reference Guide, Census of Population, 2021. Census respondents may select multiples. As such, the cumulative total percentages may exceed 100 per cent.

Language

One in 10 residents speak non-official languages, including Tamil, Urdu, and Mandarin.

In 2021, 1.2 per cent of residents reported they are unable to have a conversation in English (**Appendix 5.1-Table A5.1.4**). [16] Although this percentage seems small, it represents 8,165 residents who are likely unable to access services unless there are alternative formats available (e.g., translation services available or print material available in languages other than English), or they have assistance.

Most Durham Region residents speak English most frequently when at home (90.2%). [16] However, the remaining 9.8 per cent of residents speak a language other than English when they are at home. This is a noticeable increase compared to the 2016 estimate (7.0%). However, the number of people who speak a language other than English at home varies considerably across the region (range: 1.5 to 16.5%), with substantially higher linguistic diversity seen in the southern municipalities compared to the northern municipalities (**Appendix 5.1 – Table A5.1.4**). Figure 5.9 shows the top 10 languages spoken most often at home in Durham Region, other than English.

There are a multitude of traditional Indigenous languages being reclaimed by Indigenous Nations. For example Anishnaabemowin, the language of the Michi Saagiig, is of high importance in the region. Other languages being shared and learned by urban Indigenous communities include Kanien'keha, Inuktitut, Michif, and many others.

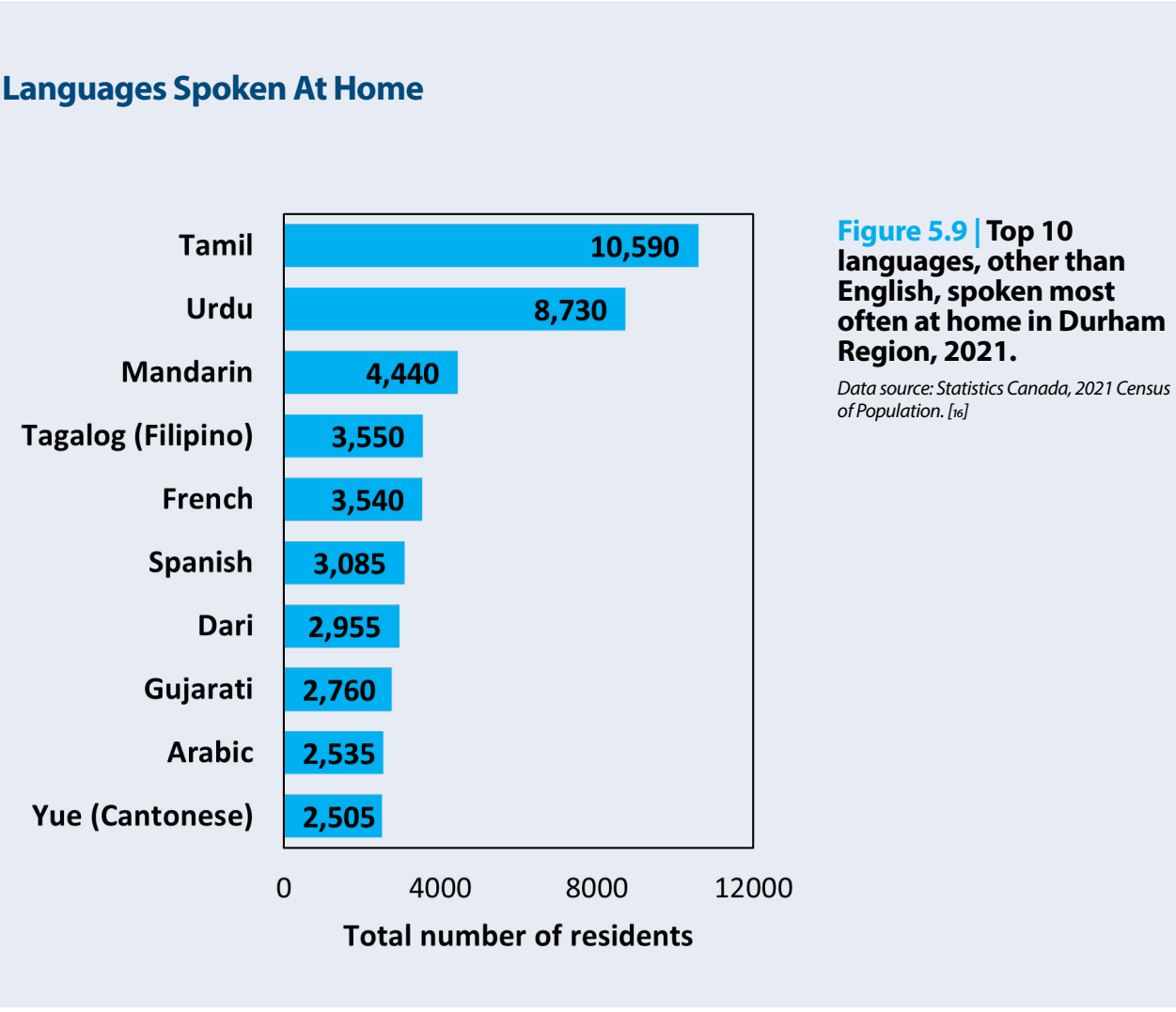


Figure 5.9 | Top 10 languages, other than English, spoken most often at home in Durham Region, 2021.

Data source: Statistics Canada, 2021 Census of Population. [16]

5.1.3 Social Capital and Networks

High-quality social connections are essential to our mental and physical health and well-being.

5.1.3.1 Social Isolation and Loneliness

Social isolation and loneliness are important, yet often neglected, social determinants of the health of older people.

Social isolation generally refers to individuals who are living alone without support and/or are too far away from services and supports. It was identified as a priority risk factor in Durham Region's Community Safety and Wellbeing (CSWB) Plan, 2021.

In this context, social isolation includes the following: [50]

- Hoarding
- Loneliness
- Elder abuse
- Lack of sense of belonging
- Live-in support gaps

Globally, social isolation among older adults has shown to be a growing public health challenge and concern, [18] due to the detrimental effect that loneliness can have on health and well-being, including:

- Early institutionalization and reduced quality of life [19]
- Increased use of and reliance on health services [20, 21]
- Reduced quality of life [22, 23]
- Shortened life expectancy for older people [22, 23]
- Impaired physical and mental health and well-being [22, 23]
- Cognitive decline [19, 24]

Throughout engagement sessions conducted by the Region for informing the CSWB Plan, there was consensus among participants that rates of social isolation have increased since the COVID-19 pandemic across all demographics and age groups.[50]. This sentiment is mirrored in the results from the RRFSS survey question on community belonging, where the substantial decrease in sense of community belonging is noticeable in 2020 (**Figure 5.10)**.

Currently, it is difficult to assess the different facets of social isolation in Durham Region, as very little data exists at the municipal or community level.

> ***Social isolation is about people who are disconnected from their support network, which impacts their sense of well-being. [50]***
>
> *-CSWB Plan engagement session participants*

Community Belonging

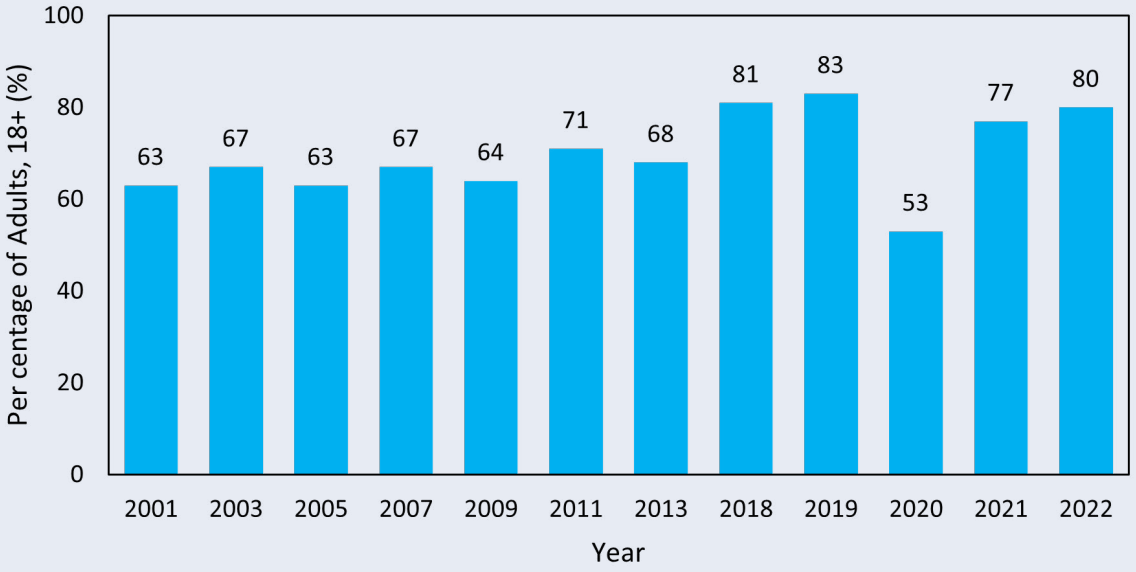


Figure 5.10 | Sense of community belonging among Durham Region adults (18+).

The estimates presented here reflect the proportion of survey respondents who said they felt they had a strong or very strong sense of belonging to their community.

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department,2001, 2003, 2005, 2007, 2009, 2011, 2013, 2018 - 2022. Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

Loneliness

Based on global estimates, approximately 45 per cent of older adults, on average, experience loneliness. [25, 26, 27]

Loneliness is a complex, multi-faceted issue and has been linked to both the SDOH, as well as personal behaviour, health, and wellness. A relationship between economic inequality and loneliness has been identified in the scientific literature. Poor living conditions can push people into greater risk of experiencing loneliness because of their limited integration into social activities and a lack of social and community support. [28]

The prevalence of loneliness has been shown to increase with age. [29] Older adults are more likely to feel lonely when reduced social and economic resources, deaths of relatives and friends, retirement, and disability lead to reductions in social activities. [25, 30] Health status and self-reported health are also strongly related to loneliness. Functional limitations, depressive mood, and presence of pain have been previously reported as factors associated with increased loneliness among older adults. [25, 31, 28] In contrast, good self-reported health, including self-efficacy, has been associated with lower prevalence of loneliness. [28]

Unfortunately, due to a lack of data, estimates of loneliness among Durham Region residents is currently not available and represents an important data gap.

Live In Support Gaps

Isolation and live-in support are not well understood. Many Durham Region residents live alone and although multigenerational homes are on the rise, live-in support benefits are variable and context specific.

Based on 2021 Census estimates, approximately one in five Durham Region residents (19.4%) lives alone and this proportion has remained relatively stable over the past 10 years (**Figure 5.11**). Seventeen per cent of older adults (65 and older) in Durham Region currently live alone, although this proportion ranges across municipalities (13.0 to 22.6%) (**Appendix 5.1 – Table A5.1.3**).

Households In Durham Region

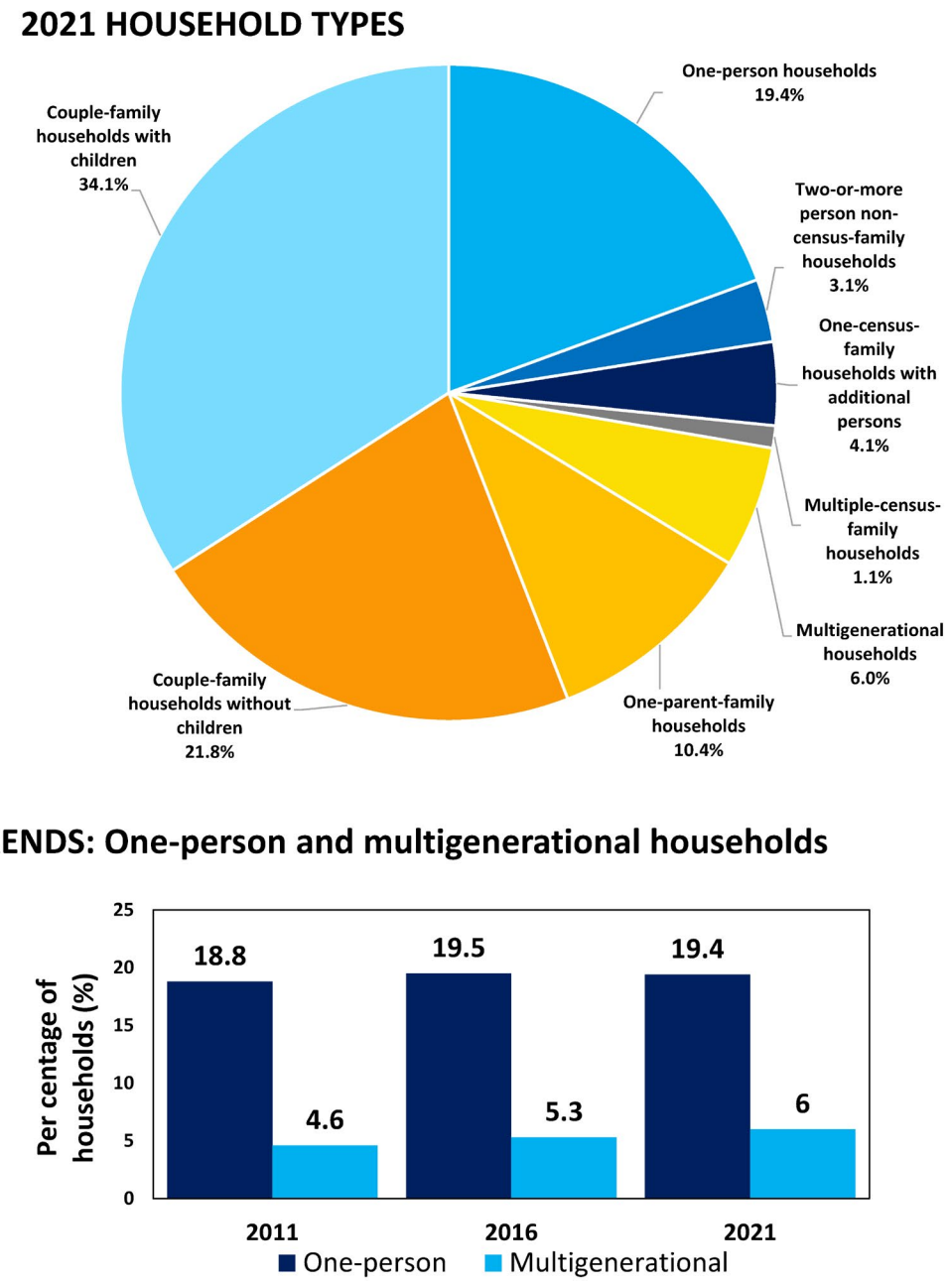


Figure 5.11 | Breakdown of household types and trends in growth of one-person and multigenerational households in Durham Region.

Top Figure adapted from The Regional Municipality of Durham Information Report #2022-INFO-79. [15]

Data source: Statistics Canada, 2021 Census of Population. [16] and Statistics Canada Household type highlight Table #98-402-X2016004-T2-CD-eng.

Multigenerational households

Over the past 10 years, there has been a noticeable increase in the proportion of multigenerational[7] households, increasing from 4.6 per cent in 2011 to 6.0 per cent in 2021 (**Figure 5.11**). [16]

Although multigenerational households have always been a part of the family landscape, several factors have contributed to their growth in recent years, including, personal choice, socioeconomic circumstances, population aging, cultural preferences, and the increasingly complex nature of family living arrangements.

This living arrangement can benefit family well-being, facilitate intergenerational relationships, provide support to family members, and protect families from poverty and food insecurity. [32] Some families chose to live in multigenerational households to allow the younger generations to provide care for their older relatives. [33] Regular company with family members can prevent social isolation among older adults, which can have wide-ranging detrimental effects on their health and well-being, as previously discussed.

Although multigenerational families may have many benefits, context matters. While this living arrangement can provide opportunities for care and support, it can also be a source of stress, especially for caregivers [34, 35, 36], as well as crowding, and intergenerational conflicts. [37, 38, 39] In the absence of alternative formal services for caregiving (e.g., respite care, home health aides, or long-term care facilities) to alleviate some care burden, family caregivers may feel they have no choice but to personally fill this void which may increase caregiver burden. [33]

7 According to Statistics Canada, a multigenerational household includes households with three or more generations present. These households contain at least one person who is both the grandparent of a person in the household and the parent of another person in the same household.

5.1.3.2 Access to Broadband Internet

There is a strong divide in internet service quality and operations between urban and rural areas in Durham Region. [40] Disparities in internet access may exacerbate existing climate related health risks among remote rural communities.

Although there isn't a standard definition for "broadband", it generally refers to Internet access that is:

- Always on.
- Available at higher speeds than traditional dial-up.
- Can transmit large amounts of data quickly.

There are several different forms of broadband Internet technologies available within Durham Region (**Figure 5.12**) and each of these technologies have different capabilities for maximum service speeds. Telephone and cable lines, where they exist, are commonly used to deliver Internet services in established areas. In rural areas, where there is no existing "wired" infrastructure, wireless broadband technology is common.

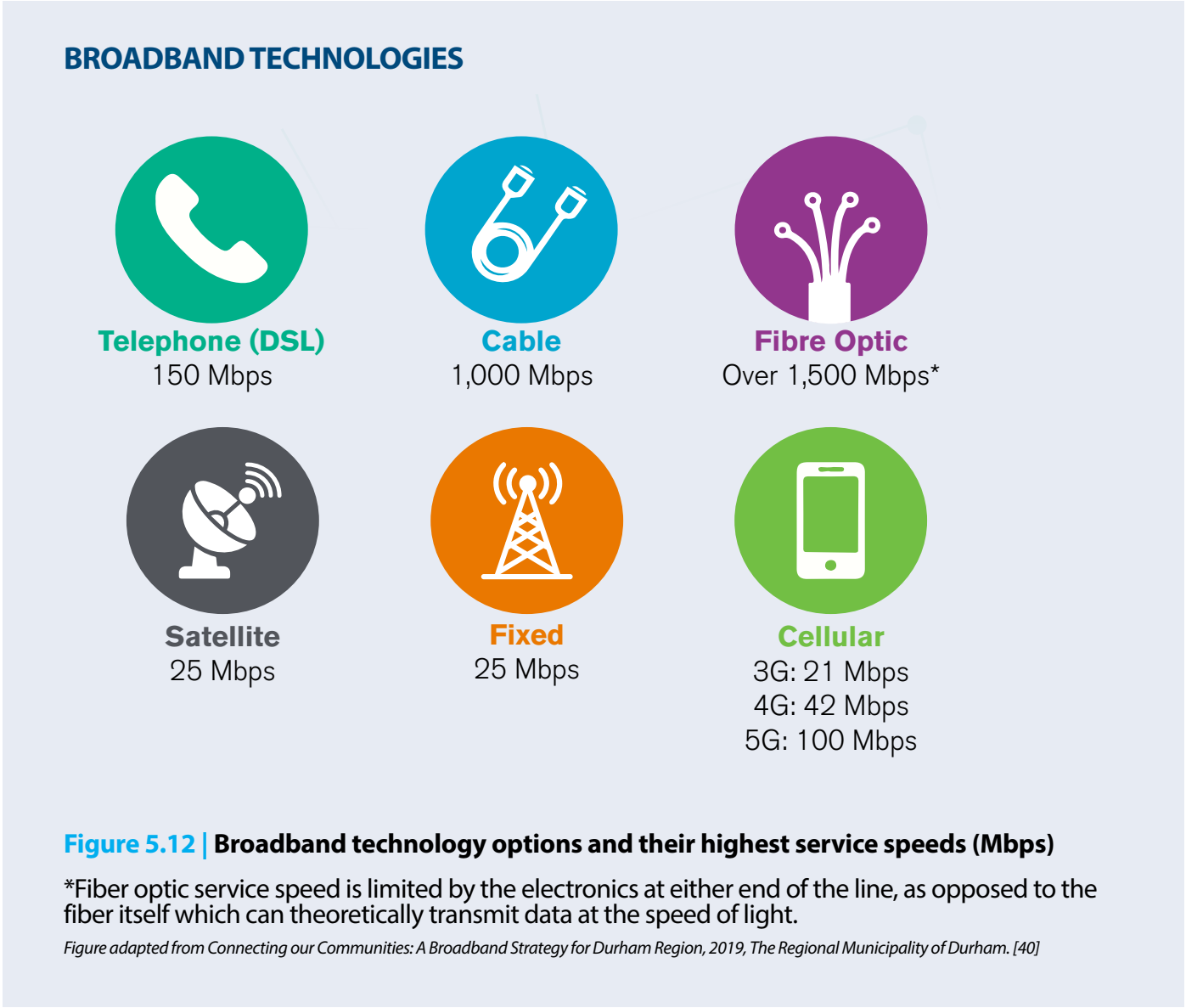


Figure 5.12 | Broadband technology options and their highest service speeds (Mbps)

*Fiber optic service speed is limited by the electronics at either end of the line, as opposed to the fiber itself which can theoretically transmit data at the speed of light.

Figure adapted from Connecting our Communities: A Broadband Strategy for Durham Region, 2019, The Regional Municipality of Durham. [40]

Why Broadband Is Important

Broadband service is key for participation in the digital economy and its use can also be important for maintaining social support networks between generations. [41, 42]

Society, and the global economy is increasingly digital and online. Government services, business functions and entertainment options have moved online at an increasing pace, continuing to change the way people work, play, and communicate. The growing demand for fast service and constant connectivity highlights the need for fast, reliable, and affordable broadband service. Since broadband service is key for participation in the digital economy, the Canadian Radio-Television Commission (CRTC) established a baseline broadband service target that Canadians require. The target which applies to residential users in both rural and urban areas, benchmarks download speeds of 50 Mbps and upload speeds of 10 Mbps (50/10 Mbps), with unlimited usage capacity.

In addition to being key for participating in the digital economy, research has also noted technology use, including access to broadband Internet, can be important for maintaining social support networks between generations. [41, 42] However, access to technology, including broadband Internet, varies by age, racial , ethnic and urban/rural status, and socioeconomic resources. [43, 44, 45]

Durham Region's Current Connectivity Conditions

The existing conditions in Durham Region reflect those of many areas across the province, which reflects a strong divide in service quality and operations between urban and rural areas.

Many parts of Durham Region, particularly the urban residential areas and lakeshore urban areas, are benefiting from infrastructure upgrades by internet service providers (ISPs). However, there are substantial service gaps in locations with low customer densities, particularly in Durham Region's rural areas. Rural areas have reported issues and constraints like lower service speeds, limited providers, and reliance on wireless broadband technologies.

In addition, the affordability of broadband is an issue for certain businesses and residents. Although there are numerous ISPs operating in Durham Region, often the level of service and the number of available ISPs is correlated with the location of the customer. **Table 5.2** and **Figure 5.13** summarizes Durham Region's current connectivity conditions.

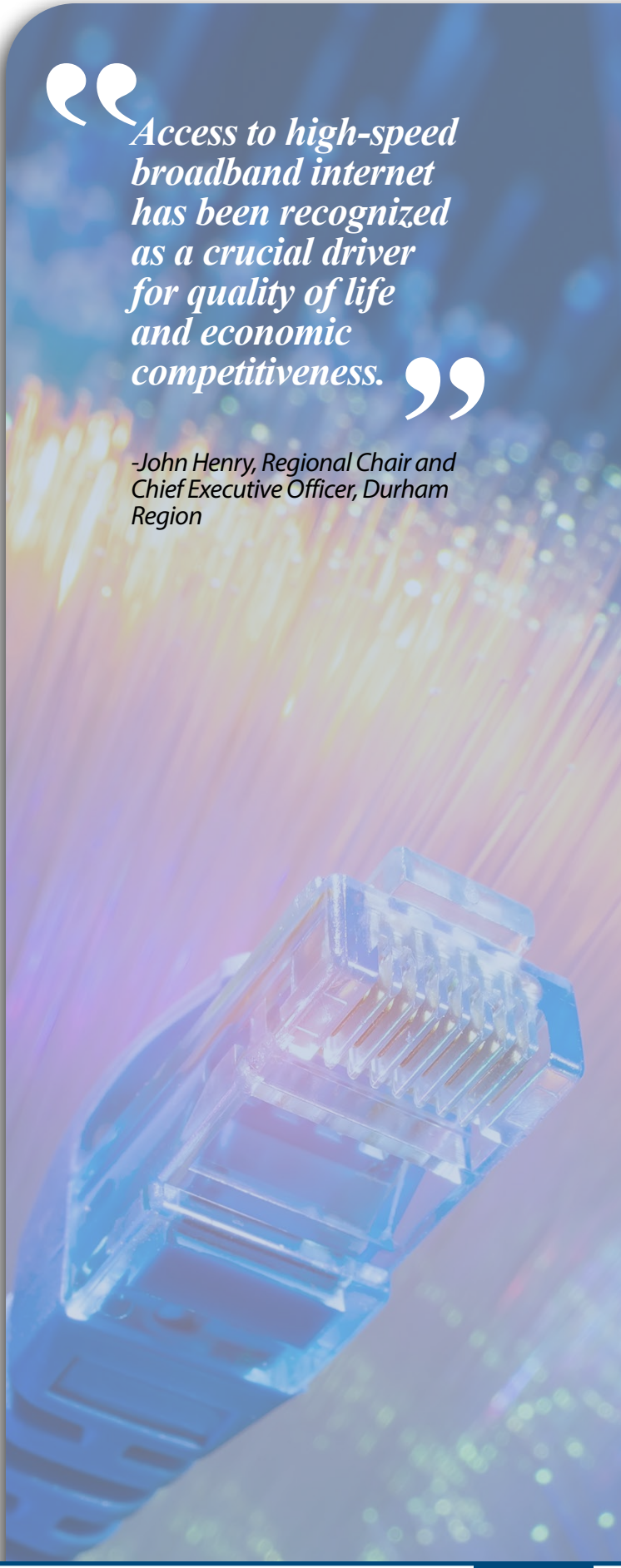


Table 5.2 | A summary of Durham Region's current broadband internet connectivity conditions across urban, rural, and business/employment areas.

URBAN AREAS	RURAL AREAS	BUSINESS AND EMPLOYMENT AREAS
• High speeds • Multiple internet service options • New broadband technologies, with competitive prices • New residential developments are well served • Major institutions (e.g., post-secondary education, health care, government) can have their needs met • Some connectivity issues where population densities are lower • Services generally meet or exceed the current CRTC baseline target of 50/10 Mbps or higher	• Lower speeds • Limited internet service options including fewer broadband technologies and limited ISPs • Generally higher prices • Prevalence of wireless broadband technology and related issues of reliability due to line-of-sight obstructions • Available service generally does not meet the current CRTC baseline target • Service quality diminishes the further north one travels	• Many locations are not pre-serviced with adequate broadband infrastructure • Capital costs to install services can be prohibitive, especially for small businesses • Downtown areas with older legacy networks face challenges with costly retrofits

Data source: Connecting our communities: A Broadband Strategy for Durham Region, 2019, The Regional Municipality of Durham p.20. [40]

Broadband Service Availability

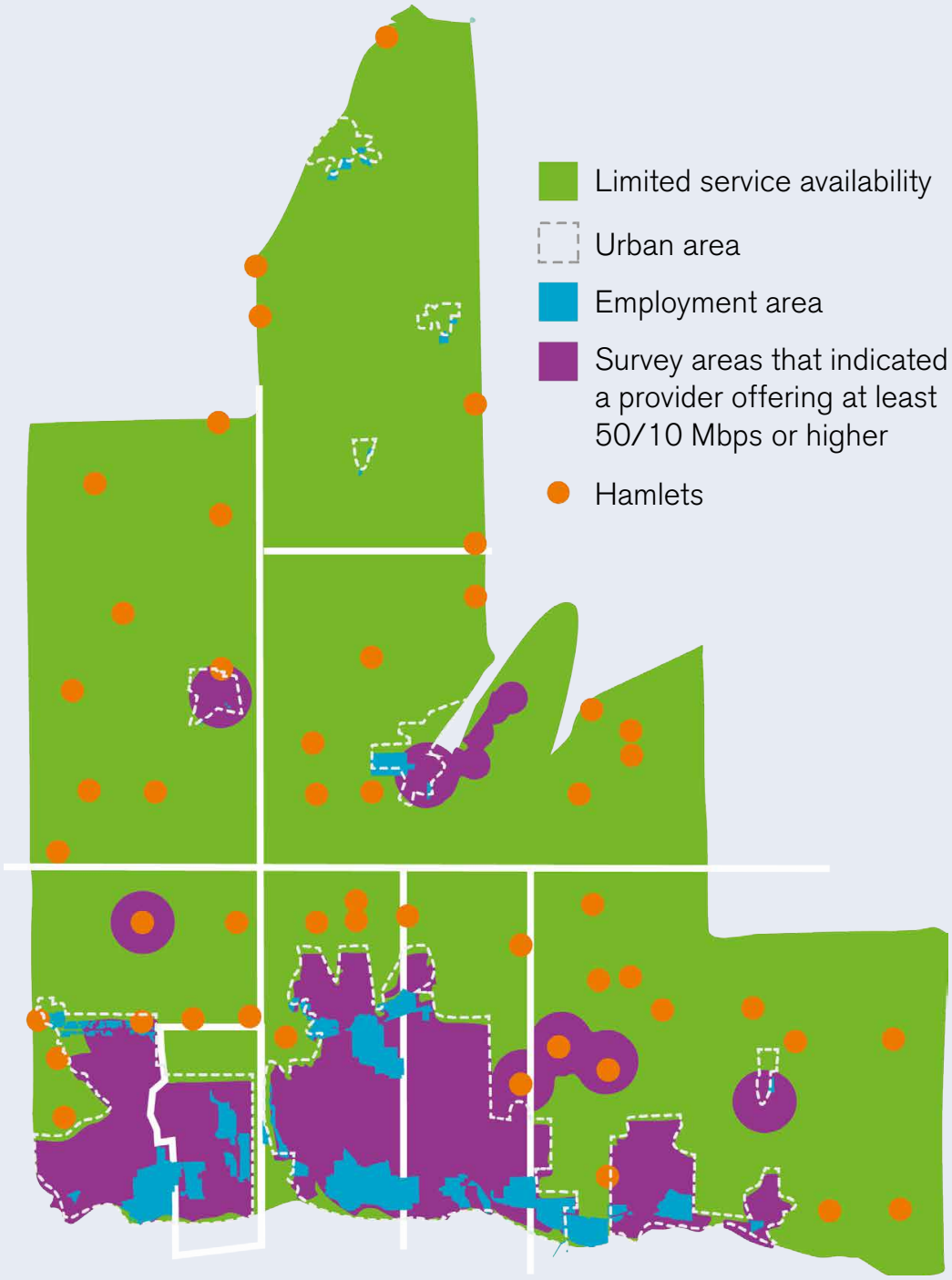


Figure 5.13 | Broadband technology service availability in Durham Region

Figure adapted from Connecting our communities: A Broadband Strategy for Durham Region, 2019, The Regional Municipality of Durham. [40]

5.1.4 Economic Disparity and Inequity

Although many residents are fortunate to have adequate economic resources, this is not the case for everyone. Many households experience financial hardship, unaffordable housing, and food insecurity.

5.1.4.1 Limited Economic Resources And Financial Hardship

There are currently 45,000 Durham Region residents living with low income. [16]

Table 5.3 presents a breakdown by age category of the total number and percentage of people living with low income in Durham Region, based on 2020 estimates. [16] It is clear there is a wide range in the proportion of households living with low income across Durham Region's municipalities (**Tables 5.3** & **Appendix 5.1 – Table A5.1.5**).

Interestingly, the proportion of households living with low income decreased in 2020 compared to the 2016 estimates. This is likely due to government payments for COVID-19 benefit. [46]

Table 5.3 | Total number and percentage of people living with low income in Durham Region based on the low-income measure after tax (LIM-AT) [8] by age category (2016 and 2020).

AGE CATEGORY	2016 PREVALENCE		2020 PREVALENCE	
	Durham Region average	Municipal range	Durham Region average	Municipal range
0 to 5 years	13.3%	6.9 to 22.2%	8.5%	3.9 to 14.9%
65 years and older	8.1%	5.8 to 11.4%	8.1%	6.4 to 14.8%
All ages	9.7%	6.4 to 14.5%	6.6%	4.8 to 10.2%

Data source: Statistics Canada, 2016 & 2021 Census of Population.

8 The LIM-AT is based on the median adjusted after tax income of all households in Canada. A household is considered to be living with low income if their income after tax is lower than the Canadian median income after tax for a household of the same size.

5.1.4.2 Indigenous Peoples Experiencing Low Income

A lack of data on Indigenous Peoples experiencing low income represents a health inequity.

Indigenous identities make up 2 per cent of the population within Durham Region, yet there is lack of data on the proportion experiencing financial hardship or low income. These data are essential for identifying and addressing health inequities. This lack of information and knowledge is an example of a health inequity.

5.1.4.3 Core Housing Need

10.6 per cent of Durham Region Residents are in core housing need. [16]

Households in core housing need refers to those where their dwelling is considered unaffordable, unsuitable, or inadequate and cannot afford alternative housing in their community. [47]

Housing supply and demand can impact core housing needs if there are insufficient affordable housing options in the community. **Appendix 5.2** provides an overview of housing supply and demand in Durham Region, including municipal-level estimates for core housing needs indicators and a description of At Home in Durham, the Durham Region housing plan for 2014 to 2024.

Core housing options in a community is also impacted by many factors including: government policies and regulations, zoning laws; infrastructure and services which affect the desirability and livability of housing; gentrification and displacement with potentially negative impacts on lower-income residents; and, access to credit and financing.

Unaffordable Housing

Approximately one-quarter of Durham Region households spend more than 30 per cent of their total income on shelter, and the growth rate for monthly shelter costs has increased substantially within the past 10 years. [16]

In 2021, 23.4 per cent of Durham Region households spent more than 30 per cent of their total income on housing. [48] However, rates of unaffordable housing vary by municipality and range from 16.7 per cent in Scugog, to 27.5 per cent in Oshawa (**Appendix 5.2 – Table A5.2.1**). [16]

> ***"Affordable housing is an important issue for people in Durham. Roughly two-thirds of respondents to the Envision Durham Public Opinion Survey think more diverse housing options and affordable housing are "very" to "extremely important".***
>
> *At Home in Durham, 2019 Five Year Review*

- Average monthly housing costs for homeowners increased by 18.5 per cent from 2016 ($1,622 per month) to 2021 ($1,922 per month). [48]
- Average shelter costs for renters increased by 31.9 per cent during this period, from $1,142 per month in 2016 to $1,506 per month in 2021. [48]

Figure 5.14 highlights the substantial increases in monthly housing costs for homeowners and renters, especially within the last 10 years. The monthly housing costs for renters in Durham Region increased 31.9 per cent between 2016 and 2021, compared to 19.6 per cent between 2001 to 2016. The housing costs for owners have also increased, although less dramatically.

Unsuitable Housing

Unsuitable housing refers to households that do not have the required number of bedrooms as measured by the National Occupancy Standard, based on the age, sex, and relationships among household members.

Of the total number of existing household dwellings in 2021, five per cent were deemed unsuitable and do not have enough bedrooms for the size and composition of the household (Municipal estimates: **Appendix 5.1- Table A5.2.1**). [48] The remaining 95 per cent of dwellings were considered suitable.

Inadequate Housing

Inadequate housing refers to homes that need major repairs.

Major repairs can include things like defective plumbing or electrical wiring or structural repairs to walls, floors, or ceilings. Out of Durham Region's total current housing stock (243,050 dwellings), 4.4 per cent were considered to require major repairs in 2021 (Municipal estimates: **Appendix 5.1 – Table A5.2.1**). [49] The remaining 95.6 per cent were in a state of good repair, with only regular maintenance or minor repairs needed.

Monthly Housing Costs, 2001 to 2021

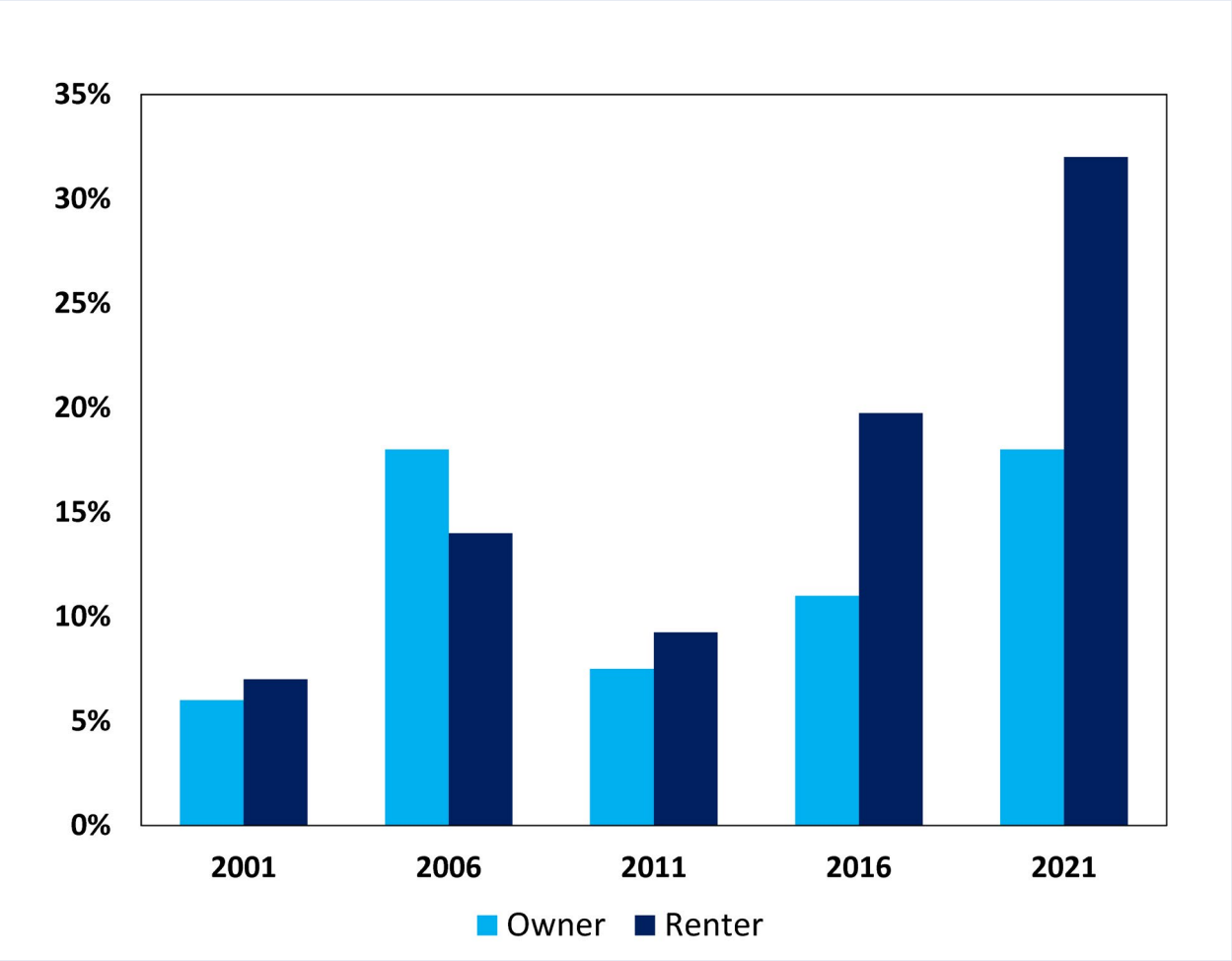


Figure 5.14 | Growth rate of monthly housing costs as a percentage of total household income for homeowners and renters in Durham Region from 2001 to 2021.

Figure adapted from 2021 Census of Population – Indigenous Peoples and Housing Portrait (Release 5), File: D01-03, Report #2022-INFO-98, The Regional Municipality of Durham, 2019. [48]

5.1.4.4 Homelessness

Homelessness exists across all demographics; having income, employment or education does not necessarily protect people from experiencing homelessness.

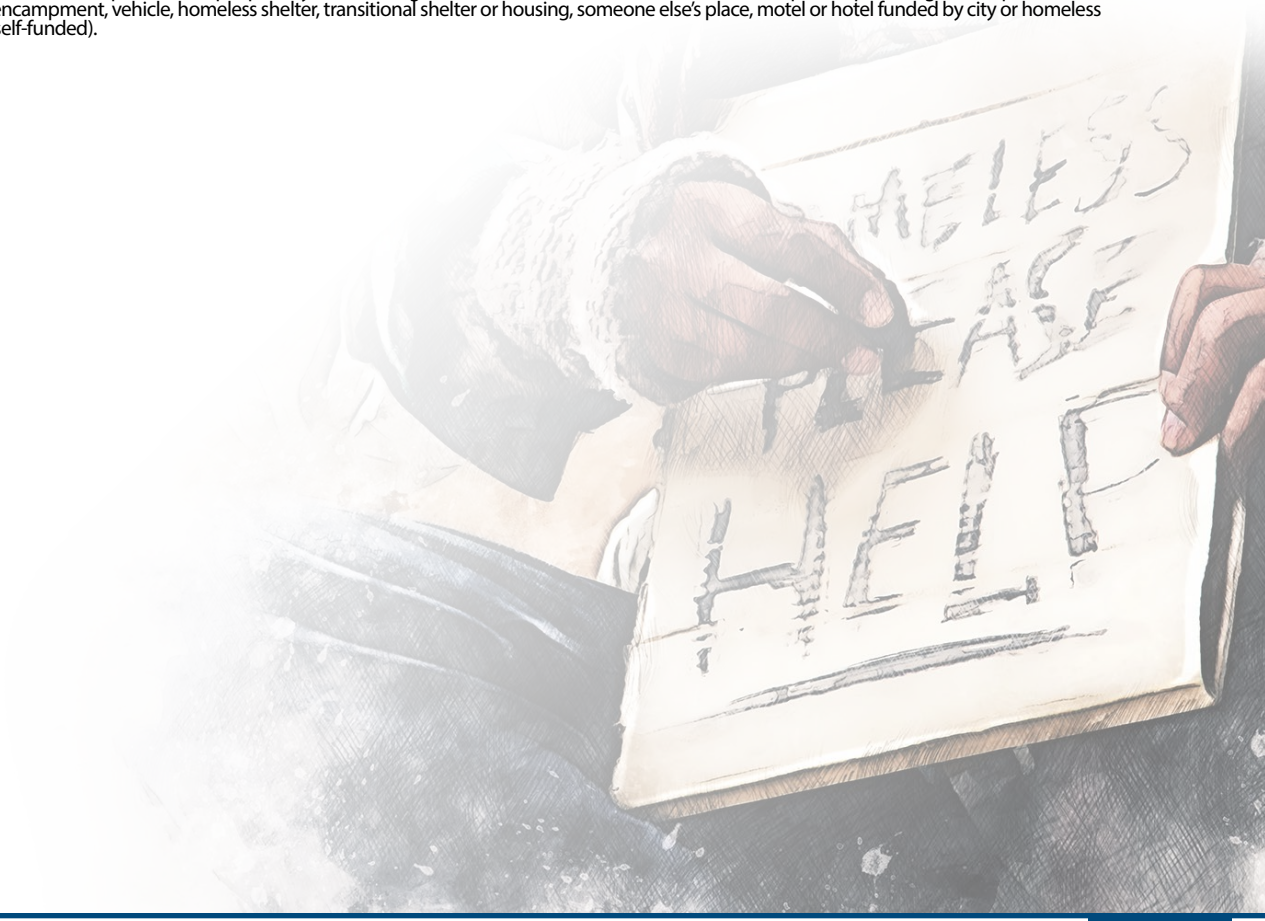
In Durham Region, at least 573 people were experiencing homelessness on October 20 to 21, 2021, based on the most recent PiT Count. [5] This total count includes people who are living unsheltered, in shelters and other transitional locations, and people who are precariously housed. The number of people experiencing homelessness in Durham Region increased significantly from 291 in 2018, to 573 in 2021. Consistent population growth, high rent costs, and the lack of available houses for rent in the region attributed to the housing market bubble, which contributed to the overall increase in the number of people experiencing homelessness in 2021. [5]

Figure 5.15 provides a high-level summary of the findings of the 2021 PiT count, including, municipal rates, overnight locations[9] , experiences and patterns of homelessness, factors contributing to homelessness and barriers to finding housing. [5]

Some important findings from the 2021 Count include: [5]

- Oshawa, Brock, and Ajax had the highest concentration of individuals experiencing homelessness.
- The most common places where people stayed on the night of the Count were unsheltered public spaces (40 per cent) and homeless shelters (27%).
- Not enough income was the top factor contributing to recent homelessness (25%).
- High rent cost (69%) and low income (68%) were the top barriers to finding housing.

9 Overnight locations refer to the place where people stayed on the night of the PiT Count and includes unsheltered public spaces (e.g., street, park, bus shelter, forest, abandoned building), encampment, vehicle, homeless shelter, transitional shelter or housing, someone else's place, motel or hotel funded by city or homeless program, and motels/hotels (self-funded).



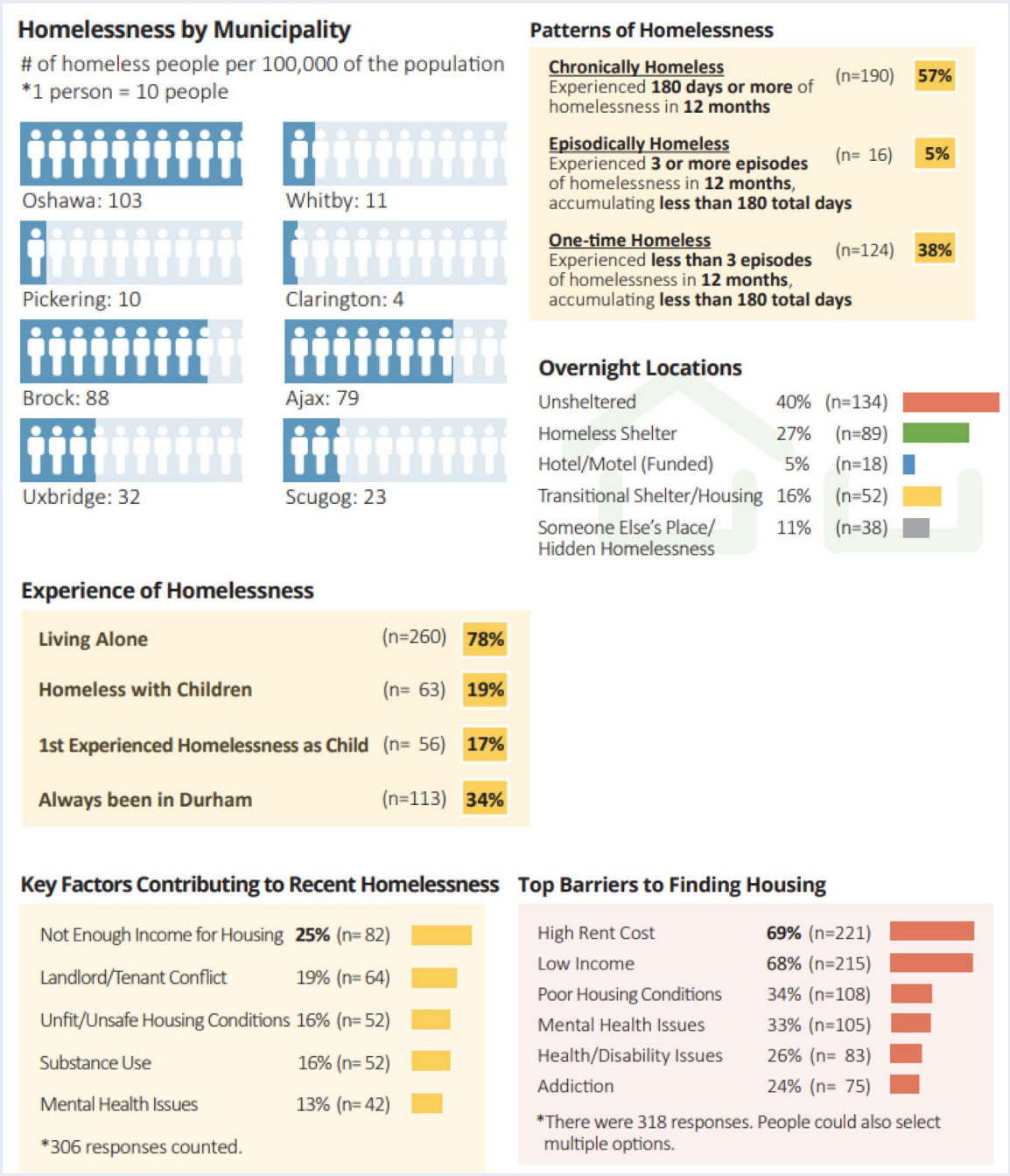


Figure 5.15 | A summary of key findings from the 2021 Durham Region PiT Count.

The PiT Count captures a snapshot of individuals experiencing homelessness in Durham Region. It was conducted within a 24-hour period in October 20-21, 2021. The Count gathered information on the number of persons and families experiencing homelessness in the Region and includes people who are living unsheltered, in shelters and other transitional locations, and people who are precariously housed (couch surfing).

Figure adapted from: 2021 Durham Region Point-In-Time Count Report 2021 – Measuring the scope and nature of homelessness in Durham, Community Development Council Durham & The Regional Municipally of Durham. [5]

Chronic Homelessness

The number of individuals experiencing chronic homelessness in Durham Region has substantially increased in recent years. [5]

Individuals can experience homelessness for a short or extended amount of time. For the purposes of this discussion, chronic homelessness is defined as an experience of six or more months of homelessness in a 12-month period. According to this definition, 57 per cent of individuals identified in the 2021 PiT Count were experiencing chronic homelessness (**Figure 5.15**). [5] The proportion of individuals experiencing chronic homelessness substantially increased from 38 per cent in 2018, to 57 per cent in 2021. [5]

Figure 5.16 highlights chronic homelessness awareness and baseline reductions in Durham Region as of December 2022. It is important to note, however, that these estimates may not capture everyone who is currently experiencing homelessness in Durham Region, as at the time of the 2021 PiT count, the By-Name List identified only 260 people as homeless, which is far fewer than the number of people counted during the PiT Count period. [5]

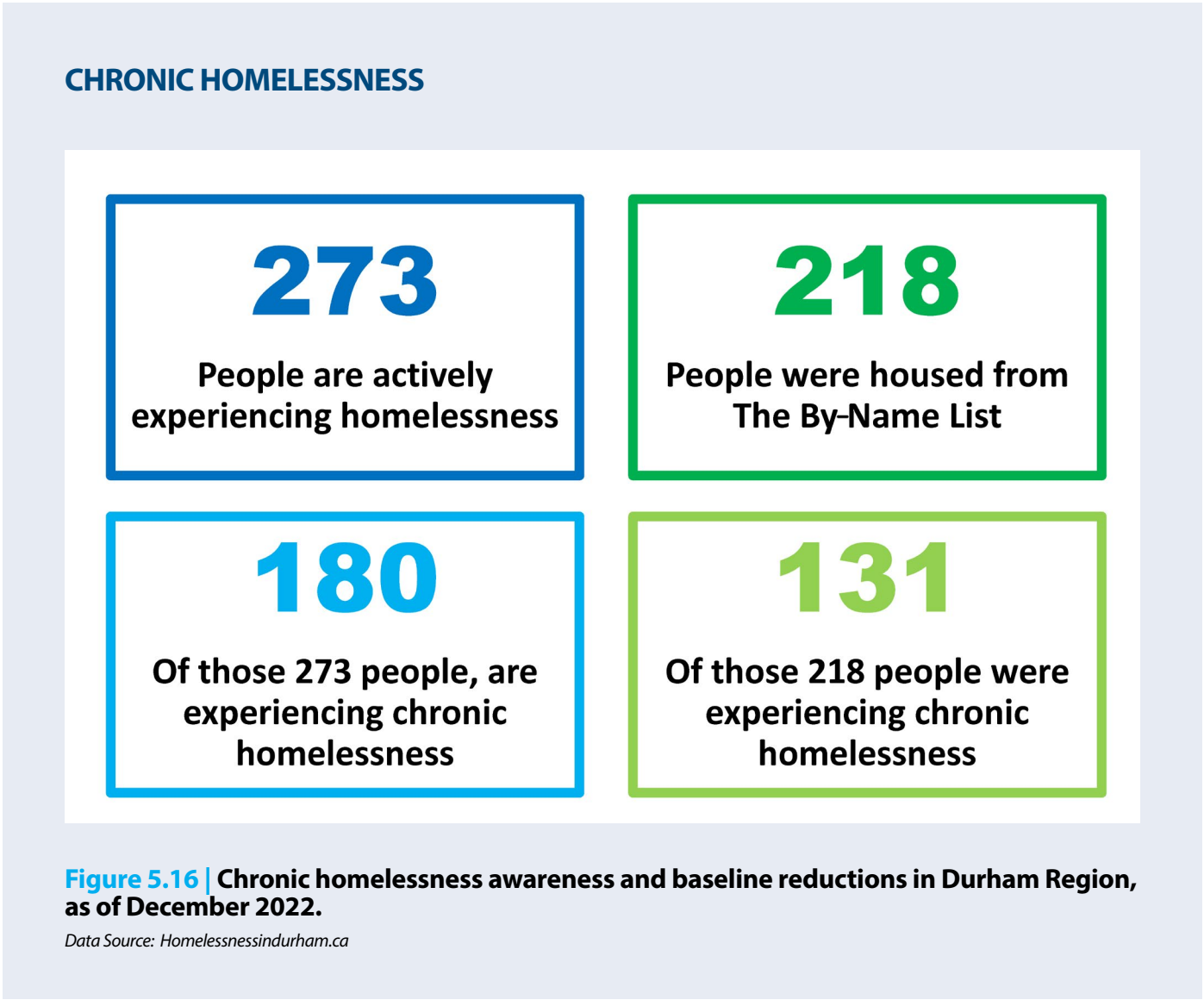


Figure 5.16 | Chronic homelessness awareness and baseline reductions in Durham Region, as of December 2022.

Data Source: Homelessnessindurham.ca

Homelessness Services In Durham Region

The demand for housing is currently exceeding local supply, which is having an impact on the demands for homelessness services in the community. [50]

There are several shelter programs across Durham Region set-up to help if people don't have another place to stay. Funded homeless shelter programs in Durham Region are all housing-focused, as part of our commitment to ending homelessness in our community. **Table A5.2.2**, **Appendix 5.2** provides a list of current shelter programs in Durham Region.

In 2019, of the 7,506 low-income applicants on the Durham Access to Social Housing (DASH) waitlist; 44.8 per cent were families. The average wait-time was 8.2 years for a single non-senior person without priority status, and despite being the largest cohort on the DASH waitlist, only 10 non-senior applicants were housed without priority status in 2019 (six singles and four families). All of these applicants were housed through programs not tied to legislated waitlist rules or with alternative housing providers that have a mandate to house people who are homeless or hard to house.

5.1.4.5 Food insecurity and malnutrition

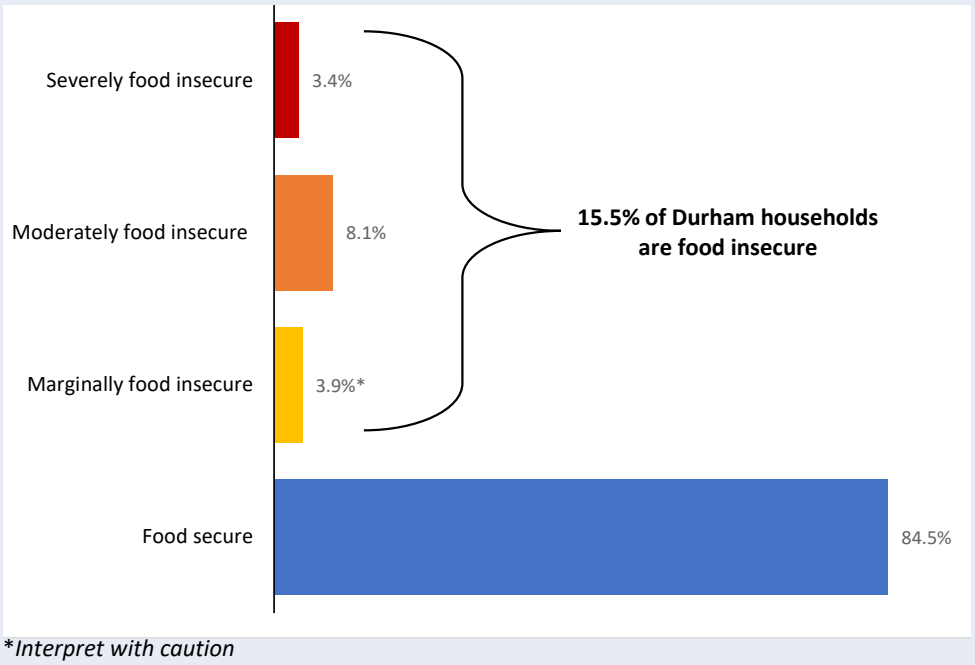
Food insecurity is experienced by 15.5 per cent of Durham Region households. [51]

Nutrition is a critical part of health and development. Better nutrition is related to improved infant, child and maternal health, stronger immune systems, safer pregnancy and childbirth, lower risk of non-communicable diseases, and longevity. [52] Malnutrition, therefore, presents significant threats to human health. Today, we face multiple forms of malnutrition, including undernutrition, inadequate vitamins or minerals, overweight, obesity, and resulting diet-related noncommunicable diseases. [52]

Food Insecurity

Food insecurity is a significant driver of malnutrition and 15.5 per cent of Durham Region households are currently experiencing food insecurity. [51]

Food insecurity refers to the inability to access or consume an adequate quality or quantity of food in socially acceptable ways, or the uncertainty that they will be able to do so. [4] Food insecurity is often linked with a household's financial ability to access adequate food. [4] Over time, general expenses such as housing and food have risen sharply, especially in the years following the COVID-19 pandemic. As these costs increase, the ability to purchase nutritious food becomes a serious challenge for many families.



**Interpret with caution*

Figure 5.17 | Household food insecurity, Durham Region, 2018 to 2020 Canadian Income Survey.

Figure adapted from The Price of Eating Well in Durham Region 2022 Report, Durham Region Health Department. [51] Data Source: Canadian Community Health Survey [2017/2018, 2019/2020], Statistics Canada, Share File, Ontario Ministry of Health and Ministry of Long-Term Care.

In June 2022, the price of a basic healthy diet for a family of four in Durham Region was $246 per week, or $1,067 per month, based on the National Nutritious Food Basket .[10] [51] For many families in Durham Region, this cost is unattainable and not being able to buy nutritious food is a reality for 15.5 per cent of Durham Region households (**Figure 5.17**).

For these families, experiencing food insecurity means:

- Worrying that food will run out.
- Needing to compromise on the type of food they eat and settling for lower quality or less nutritiously dense foods.
- Reducing the amount of food they eat or having to skip meals altogether.

Limited economic resources and financial hardship are the root causes of food insecurity. Lower household incomes are associated with increased risk of experiencing food insecurity. [51] Households living with limited or strained economic resources struggle to pay for rent, bills, and food, and are often forced to give up nutritious or preferred food choices to pay for other expenses.

The top risk factors for experiencing food insecurity include:

- Living with low income, limited access to financial resources and/or experiencing financial hardship.
- High shelter costs.
- Lack of transportation.
- Lower levels of educational attainment.

Consequently, the people at the greatest risk of experiencing food insecurity are:

- People living on social assistance (e.g., Ontario Works, Ontario Disability Support Program) or fixed incomes (e.g., Pension, those living on retirement savings).
- Workers who are relying on low-wage employment income, short-term or precarious work, or working multiple jobs.
- College and university students.
- Single parents with children under 25-years old.

Food insecurity is a serious public health issue as not being able to buy nutritious and preferred foods, and the emotional and psychological stress that comes from that, can lead to many serious negative health outcomes. [53] The negative health impacts are greatest for those experiencing severe food insecurity **(Figure 5.17**- **Red bar**). Not eating enough can put people at any age at greater risk for chronic disease, infection, and lowered immunity **(Appendix 5.3**). [54, 55, 51, 56, 57]

Any illness that results in extra medical costs or impacts an individual's ability to work, places more strain on family finances and their ability to purchase nutritious food. [51] The cycle between food insecurity and poor health is difficult to break, which places a large burden on the health care system. [58, 57]Health care costs among adults who are experiencing food insecurity are more than double those of adults who are not experiencing food insecurity. [57] Food insecurity has also been linked to increased mental health care service utilization [59], as well as increased likelihood of hospitalization with longer hospital stays and a higher risk of being readmitted. [51]

10 National Nutritious Food Basket – A survey tool used by various levels of government and other organizations to monitor the cost and affordability of healthy eating. The food basket includes approximately 60 nutritious foods and their quantities for individuals in various age and sex groups. The food basket contains a variety of foods that are consistent with Canada's new food guide and are commonly consumed by Canadians including, fruit, vegetables, protein, and whole grains. The price of a basic healthy diet is calculated by surveying the cost of these food basket items across local grocery stores. (Information available at: National nutritious food basket - Canada.ca).

Food insecurity has been linked to overweight and obesity.

Although the mechanisms explaining the relationship are still lacking, there is substantial evidence showing a significant association between food insecurity and obesity, especially in women in high-income countries. [60, 61, 62, 63] Poor nutrition and food insecurity during infancy has also been shown to be associated with overweight in toddlers [64], and has also been linked with obesity in children and adolescents. [65, 66]

Overweight and obesity are important public health concerns. [67] Obesity is a multifactorial chronic disease which is influenced by social and environmental factors, and not only by nutritional behaviours or a genetic disorder. [68] Obesity is a risk factor for many chronic diseases such as type 2 diabetes, cardiovascular diseases, metabolic syndrome, hypertension, some types of cancers, as well as many others. [69] Obesity also increases the burden on the healthcare system and it is estimated that obese individuals have a 30 per cent higher medical expenses compared to individuals with an average body weight. [70]

The number of Durham Residents who report they are obese[11] has increased recently, from 20 per cent in 20 to 23 per cent in for the 2014 to 2018 period (**Table 5.4**). Noticeable differences in the percentage of adults who report they are obese is observed across Durham Region's municipalities (**Appendix 5.1 – Table A5.1.6**), however, no significant trends have been observed over time at the municipal level, likely due to small sample sizes.

Table 5.4 | Percentage of Durham Region adults (18+) who are obese (2009-2013 vs. 2014-2018).

	PER CENTAGE OF ADULTS WHO ARE OBESE	
	2009 to 2013	2014 to 2018
Durham Region average	20%	23%
Municipal range	16 to 30%	18 to 27%

Data source: Durham data – Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department and Institute for Social Research (ISR), York University, 2009-2013 & 2014-2018.

11 Obesity reflects the percentage of adults aged 18 years or older who are obese based on a Body Mass Index (BMI) of 30 or higher. The BMI is calculated as a ratio of height-to-weight. It is not a direct measure of body fat but is an indicator of health risks associated with being underweight or overweight.

Colonization played a significant role in the increased prevalence of malnutrition, obesity, diabetes and other chronic diseases within First Nations communities.

Colonization has and continues to limit Indigenous peoples access to traditional foods, which has limited opportunities to advance food sovereignty. Today, the dependence continues to have a detrimental impact on First Nations communities, including MSIFN. For example, the Crown unjustly denied the Williams Treaties First Nations (WTFN) fishing and hunting rights between 1923 and 2018. This, in turn, had significant impacts on WTFN, exacerbating food insecurity and malnutrition. The construction of the Trent Severn Waterway flooded out entire wetlands that provided a staple food source for the Mississaugas. Deforestation, forced displacement, and the creation of private property restricted access to traditional fishing, hunting, and harvesting grounds while increasing the prevalence of monoculture agriculture, subsequently forcing a culturally and genetically inappropriate diet onto the Mississauga peoples. Assimilation policies, specifically the intergenerational harm and trauma associated with residential schools, also led to a greater dependence on settler food sources, further harming the health of First Nations individuals.

In Ontario, it is estimated that between 35 to 55 per cent of Indigenous people experience food insecurity with the highest rates observed among those living in urban settings. [12] The preservation and promotion of traditional food systems is fundamental to Indigenous health, wellbeing and livelihood. **Figure 5.18** is an example of the Anishhinaabe food pyramid which depends on access to fresh, local, seasonal and traditional foods. For example, Manoomin rice has been cultivated and eaten for centuries by the Ojibway. Besides providing food, the wild rice also prevents erosion and provides habitat for migratory birds, fish and other animals. [13] MSIFN concerns over land use and food security continue today as farmland and green lands are lost to urban sprawl and development in Durham Region.

To learn more about assimilation policies that affected the health and rights of Indigenous peoples, see "The United Nations Declaration on the Rights of Indigenous Peoples Act Action Plan" published by the Government of Canada. This resource identifies specific measures to address Indigenous economic, health and social rights. [14]

12 Available at: https://cdn.nutrition.org/article/S2475-2991(22)12047-0/fulltext"First Nations Food Environments: Exploring the Role of Place, Income, and Social Connection - Current Developments in Nutrition

13 To learn more about Anishinabek traditional foods and agriculture visit Anishinabek Nation Agriculture at: https://anishinabekagriculture.ca/agriculture/wild-rice/"Wild Rice and Grains (Bgoji minoomin miinwaa mzinenhsan) | Anishinabek Agriculture & Food

14 Available at: "https://www.justice.gc.ca/eng/declaration/ap-pa/ah/pdf/unda-action-plan-digital-eng.pdf"unda-action-plan-digital-eng.pdf (justice.gc.ca)

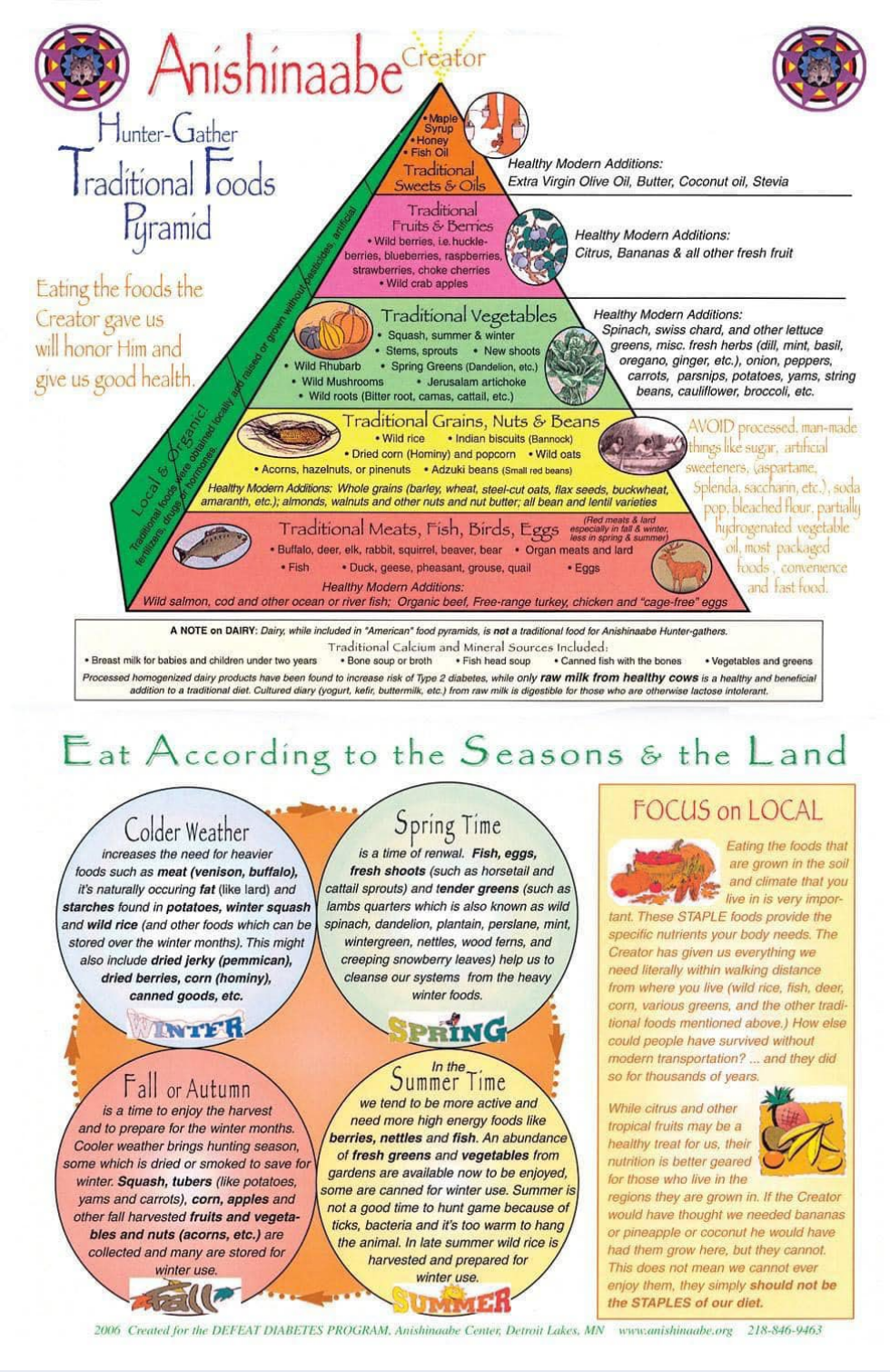


Figure 5.18 | Anishinaabe Traditional Foods Pyramid

https://www.facebook.com/tribalfoodsovereignty/posts/this-anishinaabe-traditional-foods-pyramid-demonstrates-eating-according-to-the-/2838315942981763/

5.1.4.6 Water Insecurity and Scarcity

Durham Region is fortunate to have some of the best drinking water in the world, however, we are not immune to experiencing water insecurity.

The United Nations defines water security as "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against waterborne-pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability". [10] The concepts which make up water security are illustrated in **Figure 5.19**.

Canada is known as a water-rich nation, but we are not a water-secure nation. This is especially true as the climate crisis is quickly becoming a water crisis as water insecurity increases across the globe.

Water insecurity or scarcity is a relative concept. The amount of water that can be physically accessed varies as supply and demand changes. Scarcity intensifies as demand increases and/or as supply is affected by decreasing quantity or quality. Water can be scarce for many reasons including, demand exceeding supply, inadequate water infrastructure, and institutions may be failing to balance everyone's needs. [10] The impacts of our changing climate are also making water more unpredictable. Terrestrial water storage, in other words, the water held in soil, snow, and ice, is diminishing, leading to increased water scarcity.

Access to potable water is everyone's fundamental human right, as acknowledged by the United Nations. In the absence of sufficient quantity and quality water resources, livelihoods and communities are adversely impacted, as well as activities such as cooking, bathing, and farming. [71] Inadequate access to available water resources can also make us vulnerable to infectious diseases, due to poor sanitation and in some cases create conflicts between water users and reduced resilience of communities. [71, 72] Unfortunately, water insecurity continues to be a chronic concern for many rural, remote, and Indigenous communities across Canada. [71, 73, 74]

> ***"There is an incredibly important need for a nationally co-ordinated approach to water sustainability. Water is the messenger that tells us we are in a climate crisis. It is our wakeup call."***
>
> *-Dr. John Pomeroy (Canada Research Chair in Water Resources and Climate Change at the University of Saskatchewan)*

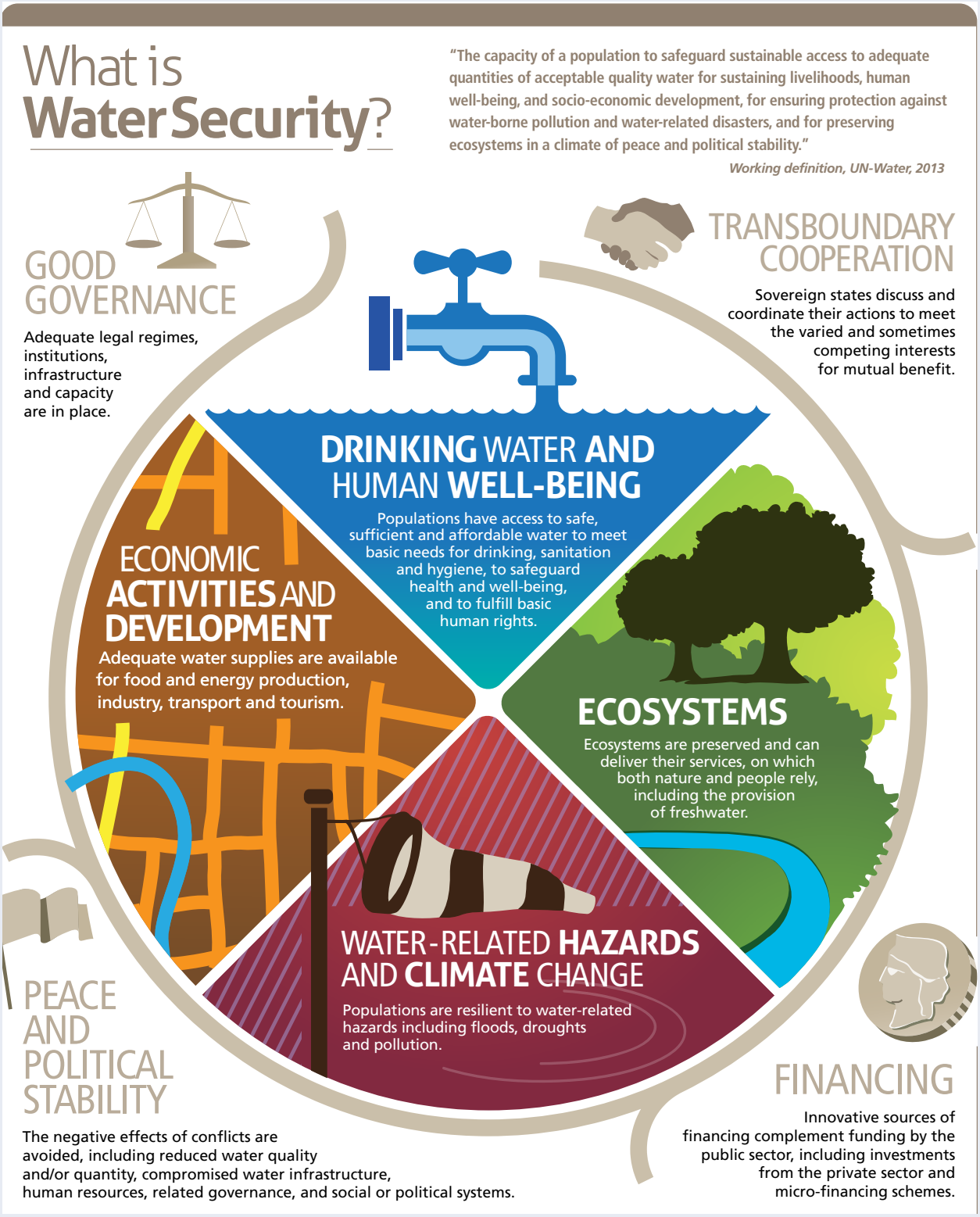


Figure 5.19 | What is water security?

Figure adapted from UN-Water What is water security infographic. [10]

Adverse drinking water quality incidents (AWQI)

In Ontario, AWQIs reflect events when water in a drinking water system does not meet the Ontario Drinking Water Quality Standards or a problem with a small drinking water system (SDWS) is identified that could lead to poor water quality. [75] An AWQI includes unacceptable sample test results or water treatment system failures and indicates that water may be unsafe to drink. In Durham Region, there were 609 reported AWQI events involving SWDS from 2015 to 2020. Many of these incidents (68%) involved bacterial contamination (**Figure 5.20**).

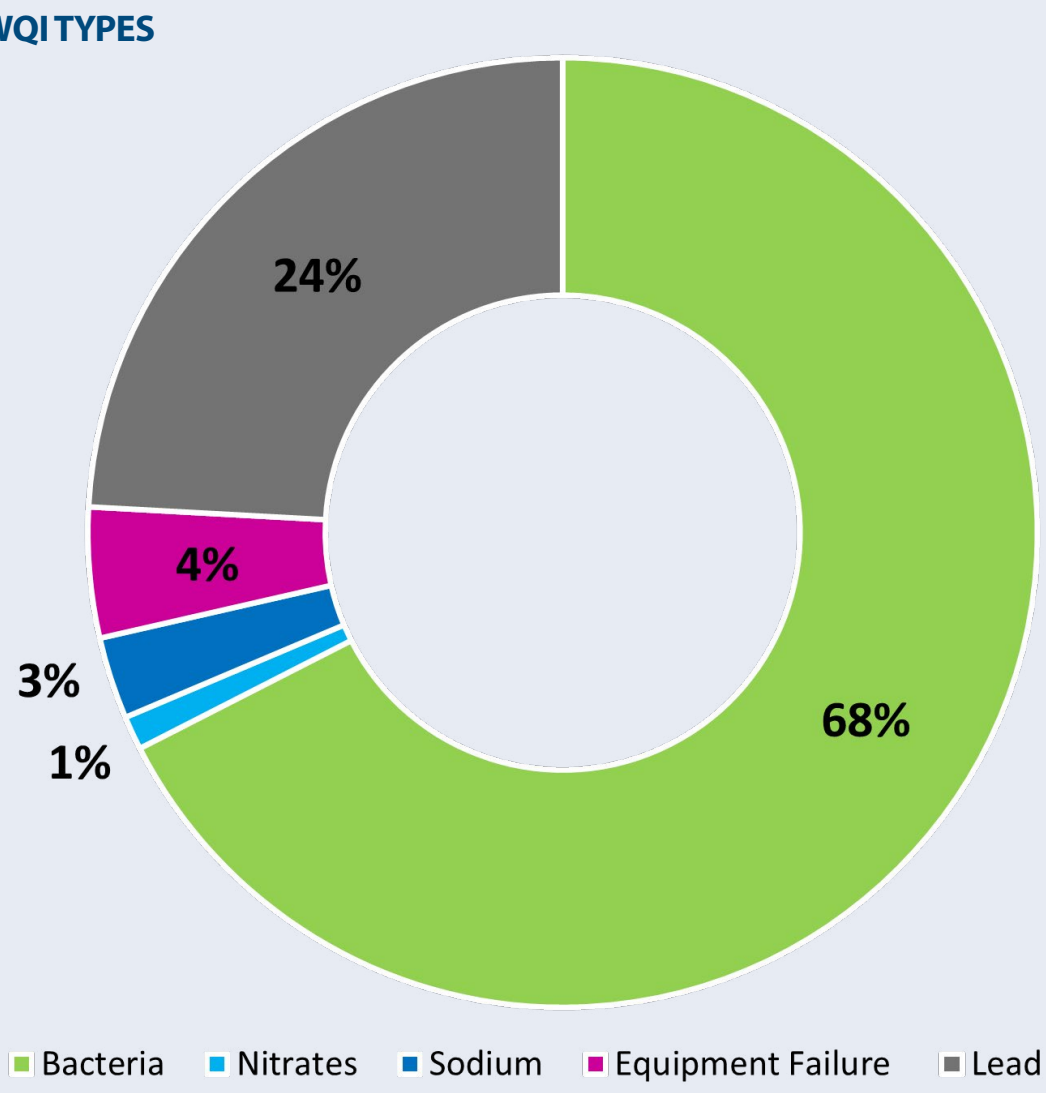


Figure 5.20 | Adverse water quality incidents (AWQI) by type for small drinking water systems in Durham Region from 2015 to 2020.

Source: Safe Water, Small Drinking Water Systems (SDWS) and Lead databases, Durham Region Health Department.

Water and the Mississaugas of Scugog Island First Nation (MSIFN)

MSIFN emphasizes the unbreakable and sacred bond that Indigenous women share with the land and water.

Love, mutual respect, and responsibility towards the natural world, and water in particular, is of central importance to MSIFN. It is crucial for Indigenous Peoples to have access to traditional hunting, fishing and ceremonial sites to support and preserve the unique and diverse knowledge, as well as Indigenous identity, particularly in roles where women are the 'first responders' on the ground.[15]

15 To learn more about Indigenous Peoples' relationship with water see: Dr. Deborah McGregor's presentantion on: "Reciprocity, Water Justice, and Anishinabek Worldview, Knowledge and Tradition" Available at: https://www.youtube.com/watch?v=hJ2G3vpTnFE]

5.1.4.7 Environmental Exposures

Extensive scientific evidence documents the unequal distribution of environmental exposures and subsequent geographic segregation by wealth and racial status. [13, 77]

Environmental exposures can be positive or negative. Positive exposures include environmental amenities (e.g., parks, green spaces, natural water bodies, grocery stores and healthy foods). [78, 79, 80] Negative exposures include environmental hazards (e.g., air pollution, toxic emissions) [81, 77]. Most environmental exposures are determined by the setting where a person lives, works, and plays. Racialization and wealth often influence an individual's ability and power to choose positive environmental exposures and avoid negative ones. [13, 82] Wealth disparities are self-reinforcing and limit the mobility of socioeconomically marginalized populations, resulting in geographic segregation. [82] These groups may in turn be forced to live with dangerous air pollution or unsafe living conditions in order to access employment or affordable housing. [13] Public zoning decisions can also drive geographic segregation and health inequity if the dis-amenities drive out those who can afford to move. [83] In addition to harmful environmental exposures, these disadvantaged neighbourhoods often experience stigma that perpetuates further isolation, neglect, and limited access to public spaces. [84]

The introduction of positive environmental exposures such as parks and green spaces can also drive geographic segregation and health inequities. Neighbourhood-level investments in local amenities may trigger neighbourhood gentrification. Renewal strategies without matched commitments to affordable housing, transportation, and food can deepen the marginalization of disadvantaged residents who can no longer afford to live in their own community. [84]

Evidence of inequitable environmental exposures have been documented in relation to:

- Exposures to toxic chemicals through chemical facilities toxic emissions. [81]
- Cumulative health risks from exposures to multiple pollutants. [77]
- Access and availability to environmental amenities like grocery stores and more healthful foods. [80]
- Access and presence of parks [78] and overall tree cover. [79]
- Discriminatory residential steering practices within real-estate. [82]
- Influence of the legacy of racially based housing on programs [85] and residential policies based on house type and lot size. [86]
- Loss of access and availability to traditional hunting, fishing and ceremonial sites for Indigenous Peoples.
- Harm and degradation of Indigenous lands, water, and foods. For example the building of dams and the Trent Severn Canal, lake dredging, the introduction of the common carp fish, and lake shore development destructed wild rice beds.[16]

Currently, very little data are available to assess inequities in the distribution of exposures to environmental quality across Durham Region.

16 To learn more about Anishinabek food and agriculture see the Anishinabek Nation Agriculture website. Available at: https://anishinabekagriculture.ca/agriculture/wild-rice/. To learn more about Indigenous environmental justice in Canada visit the IEJ Project with a featured video entitled: " What is Indigenous Environmental Justice?" available at: https://www.youtube.com/watch?v=nzKfevGLvCA

5.1.5 Health and Well-Being of Durham Residents

Supporting the interconnections of physical, mental, emotional, and spiritual health as well as personal, community and ecosystem health can improve climate resilience.

Individuals with pre-existing chronic health conditions, and those experiencing mental health challenges have an increased susceptibility to environmental stressors from climate change, which can lead to increased risk of negative health impacts.

This is why it is important for climate and health models to emphasize the relationships between personal health, community health and ecosystem wellbeing. For example, many First Nations including the Mississaugas of Scugog Island First Nation (MSIFN), apply the teachings of Medicine Wheel which underscores the interconnection of all life and the significance of attaining balance and harmony within oneself and with the natural world. These holistic and relational approaches to health can help guide decision-making to enhance resilience against the adverse health effects resulting from climate change.[17]

Most Durham Region residents generally perceive their physical (56%) and mental (69%) health to be excellent or very good, however, this can vary based on where they live (**Appendix 5.1 –Table A5.1.7**).

Table 5.5 presents a summary of several chronic disease indicators for Durham Region residents (Municipal estimates: **Appendix 5.1 – Table A5.1.7**). Considering Durham Region's growing aging population, and the negative health impacts from our changing climate, an increased chronic disease burden is expected.

17 to learn more about the teachings of the Medicine Wheel watch the presentation by Kaaren Dannenmann at Saagajiwe at the Creative School of Toronto Metropolitan University. Available at: https://www.torontomu.ca/saagajiwe/sikose/medicine-wheels/

Table 5.5 | Select chronic disease indicators for Durham Region.

INDICATOR	YEAR	ESTIMATE
Age-sex standardized asthma prevalence in children[18] , ages 0 to 14 years	2019	14.9 per 100
Annual cardiovascular disease (CVD) hospitalization rate [19], adults aged 45 to 64 years	2015-2017	8.9 per 1,000
Age-sex standardized diabetes prevalence[20] , adults 20 years and older	2019	12.6 per 100
Age-sex standardized hypertension prevalence[21] , adults 20 years and older	2019	26.5 per 100
Lung disease (COPD) prevalence[22] , adults 35 years and older	2016	10.4 per 100
Age-sex standardized mental health and addictions (MHA)[23] emergency visits, all ages	2019	11.6 per 1,000
Age-sex standardized MHA emergency visits, ages 0 to 24 years	2019	14.6 per 1,000
Age-sex standardized MHA doctor visits[24] , all ages	2019	16.2 per 100
Age-sex standardized MHA doctor visits, ages 0 to 24 years	2019	15.1 per 100

Data sources: Asthma, diabetes, hypertension, COPD prevalence and MHA emergency department and doctor visits: Morais, S; Fortin, N; Plumptre, L. Indicators for Durham Region Health Neighbourhoods Update, Applied Health Research Questions (ARHQ) 2019 0950 150 000. Toronto: Institute for Clinical and Evaluative Services, 2023; Cardiovascular disease hospitalization rate: Hospital In-Patient Discharges, 2015-2017, Ministry of Health and Ministry of Long-Term Care, intelliHEALTH & 2016 Census, Statistics Canada.

18 The number of children aged 0 to 14 years diagnosed with asthma, per 100 children. A patient is said to have asthma, if, within a two-year period, they had at least two Ontario Health Insurance Plan (OHIP) claims with an asthma diagnostic code or a hospital admission for asthma.

19 The rate of hospital discharges for CVD among people aged 45 to 65 years of age, per 1,000 people in that age group. This includes hospital discharges for heart disease, stroke and hypertensive diseases. Hospitalizations with missing postal codes are excluded.

20 The prevalence of diabetes in people aged 20 years and older, per 100 people in that age group. A patient is said to have diabetes if, within a two-year period, they had at least two OHIP claims with a diabetes diagnostic code or one selected diabetes related OHIP service claim, or a hospital admission for diabetes.

21 The prevalence of hypertension, or high blood pressure, in adults aged 20 years and older, per 100 adults in that age group. A patient is said to have hypertension, if, within a two-year period, they had at least two OHIP claims with a hypertension diagnosis code, or a hospital admission for hypertension.

22 The prevalence of COPD in people aged 35 years and older, per 100 people n that age group. COPD is a lung disease that includes chronic bronchitis and emphysema. A patient is said to have COPD if, within a two-year period, they had at least one OHIP claim with a COPD diagnostic code or a hospital admission for COPD.

23 MHA include substance-related disorders, schizophrenia and other psychotic disorders, mood disorders and anxiety disorders.

24 Doctor's office visits include scheduled visits to family doctors, pediatricians, and psychiatrists.

Excluding MHA doctors visits, higher values or increases in these indicators are worse for health. The impact on health for MHA doctors visits is complex and higher percentages can be better or worse for health. Increases may be better for health if they result from decreased stigma and increased access to health care. However, increases may be worse for health if they reflect increases in the incidence and/or severity of mental illness and addictions in the community.

5.1.5.1 Neighbourhoods and Health

Although Durham Region residents generally enjoy good physical and mental health, health indicators vary substantially based on where they live.

Health is about more than lifestyle choices and having access to medical care when we are already sick. Our health and well-being are affected by our living conditions – where we are born, grow, live, work and age. The physical, social, and economic characteristics of an area can influence physical activity levels, how easy it is to get to work, the quality of housing, social interactions, access to health care, availability of nutritious foods, exposure to crime and violence, how we feel about where we live, exposure to environmental contaminants or hazards, our connection to nature, and much more. All these factors affect our health and well-being. For example, important differences in physical and mental health status between rural and urban populations have been well documented in the scientific literature (**Appendix 5.1 – Table A5.1**).

Durham's Health Neighbourhoods

Durham Region has 50 Health Neighbourhoods and tracks 96 indicators to better understand demographics that can impact the health of Durham's communities. Health Neighbourhoods also help to track local health disparities that may be exacerbated by climate hazards.

To better understand health and well-being across Durham Region at a finer geographic level than municipality, the DRHD launched the Health Neighbourhoods initiative in 2015. These areas were created by dividing the Region into 50 smaller community boundaries, called Health Neighbourhoods. The boundaries were developed with the intention of creating areas with a sufficient population size that health information could be presented accurately. Based on 2016 Census data, there are approximately 13,000 people in each Neighbourhood, on average. The Neighbourhoods are typically larger than what most would think of as a "neighbourhood", but this was necessary for reporting health statistics. **Figure 5.21** depicts the geographic boundaries of the 50 Health Neighbourhoods.

Durham Region is a diverse with a mix of urban, suburban, and rural areas. Durham Region has some very fast-growing communities, as well as some rural communities that span large geographic areas, but have relatively small populations with little growth. The Neighbourhoods show the diversity of Durham Region across a wide range of demographic and health characteristics.

Health Neighbourhoods

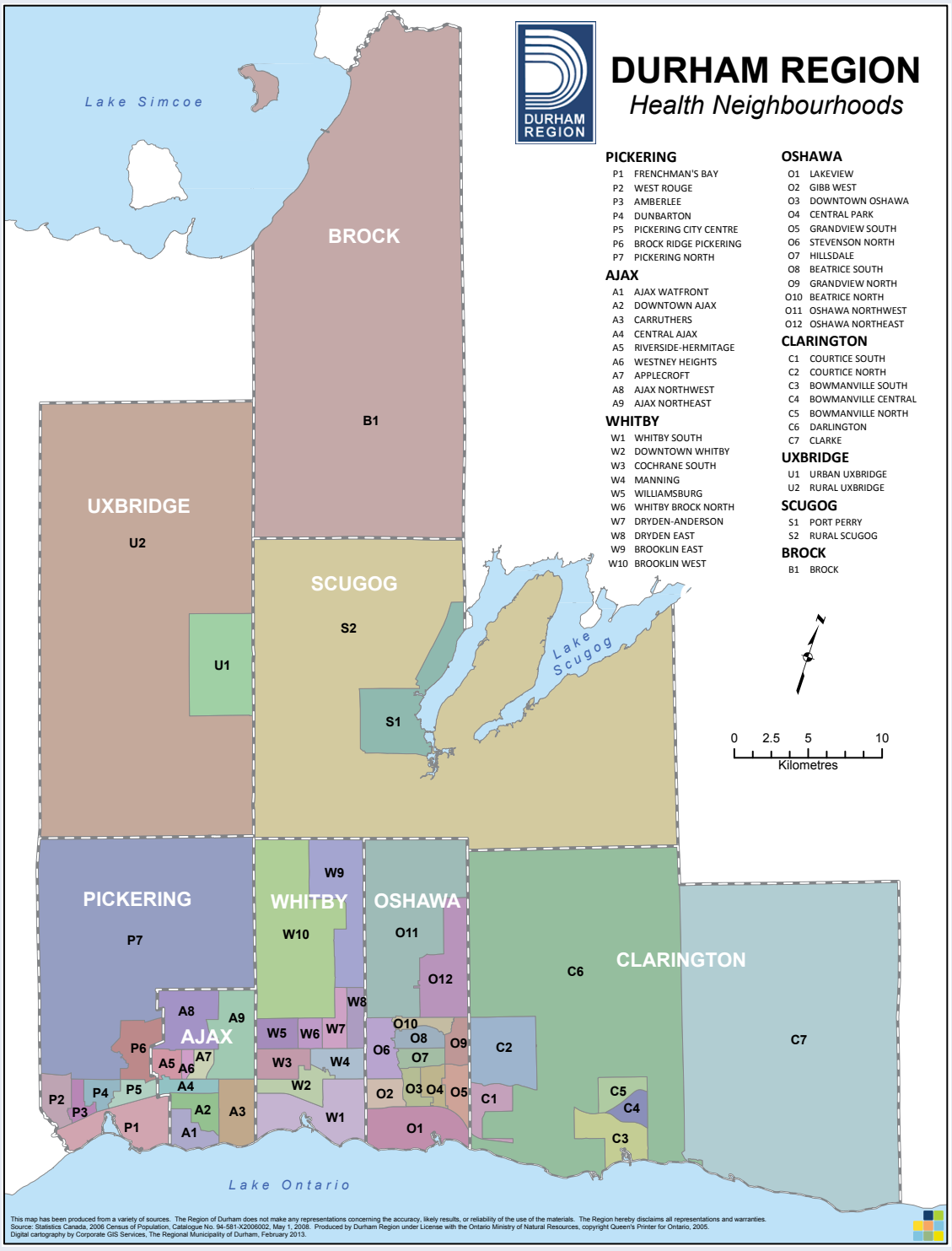


Figure 5.21 | Geographic boundaries of Durham Region's 50 Health Neighbourhoods.

Source: Health Neighbourhoods in Durham Available at: durham.ca/neighbourhoods.

In general, Durham Region residents enjoy good health. However, it is clear that health varies by where you live and that there is much room for improvement. Three important geographic trends have been noted in terms of differences in physical and mental well-being between the 50 Health Neighbourhoods, including urban-rural differences, east-west differences, and downtown Neighbourhood differences. [87]

Urban – rural differences

- Rural Neighbourhoods have lower birth rates, smaller populations of young children, more seniors and fewer visible minorities and recent newcomers.
- They also have higher rates of enteric diseases and emergency department visits for injuries.
- Adults living in rural Neighbourhoods also tend to eat more vegetables and fruit, have lower prevalence of asthma in children, diabetes in adults and lower ambulance calls to residences.

East – west differences

- Recent newcomers and racialized populations are concentrated in south-west Durham Region, with the lowest concentrations of these populations seen in the north-east.
- Median household income levels and commuting durations are also higher in the west compared to the east.
- Rates of lung disease, as measured by prevalence of chronic obstructive pulmonary disease (COPD) in those 35 and older, are higher in the eastern municipalities compared to the west.

Downtown Neighbourhood differences

- The Neighbourhoods in the downtown areas of Pickering, Ajax, Whitby, and Oshawa tend to have lower incomes, more seniors living alone, more households that rent and fewer young people.
- These urban areas also have some important health challenges.

Priority Health Neighbourhoods

Seven Health Neighbourhoods have been identified by DRHD as communities that require focus to build on health and well-being.

In the 2015 report Building on Health in Priority Neighbourhoods, DRHD identified seven Priority Neighbourhoods as areas that require focus to build on health and well-being. [88] The intention of identifying these Priority Neighbourhoods was to spark a dialogue to create positive action.

The Priority Neighbourhoods are (**Figure 5.22**):

1. Downtown Ajax – Ajax
2. Downtown Whitby – Whitby
3. Lakeview – Oshawa
4. Gibb West – Oshawa
5. Downtown Oshawa – Oshawa
6. Central Park – Oshawa
7. Beatrice North – Oshawa

Priority Health Neighbourhoods

AJAX
A2 – Downtown Ajax
WHITBY
W2 – Downtown Whitby
OSHAWA
O1 – Lakeview
O2 – Gibb West
O3 – Downtown Oshawa
O4 – Central Park
O10 – Beatrice North

Figure 5.22 | Location of Durham Region's 7 Priority Health Neighbourhoods.

Source: Health Neighbourhoods in Durham Available at: durham.ca/neighbourhoods.

These seven neighbourhoods make up about 15 per cent of Durham Region's population. They also have the lowest income levels (based on median after-tax household income). They also rank poorly in terms of overall low-income rate (overall and for children and seniors), low education levels, and unemployment compared to the other 43 Health Neighbourhoods. These Neighbourhoods also have many health challenges as shown by their rates and ranking on a variety of indicators. Although the seven Priority Neighbourhoods have some high needs in terms of health, they also have many strengths and community assets on which to build.

5.2 Mississaugas of Scugog Island First Nation

The Mississaugas of Scugog Island First Nation is located within the geographic boundaries of the Regional Municipality of Durham.

The Mississaugas of Scugog Island First Nation (MSIFN) is located near the shores of Lake Scugog on Scugog Island, approximately 45 km southwest of the City of Peterborough and 10 km northeast of Port Perry, Ontario. MSIFN is 826.64 acres (334.53 hectares) in size. Approximately half of the lands are developed. Road access to the community is via Highway 7A and Island Road. As of November 2023, MSIFN's membership totals 265 people, with approximately half of that residing in the community.

MSIFN's website lists several areas of concern affecting their community. These are: renewable energy (e.g., solar, wind, biogas); resource development (e.g., aggregates, pits and quarries); municipal water and wastewater plants; energy (e.g., nuclear and hydro-electric); stewardship (e.g., species at risk, environmental and archaeology); provincial roads, bridges and highways (e.g., ETR 407), and certain private enterprises that have provincial sanction.[25]

Image source: Scugogfirstnation.com

25 For more information visit: www.scugogfirstnation.com]

> ***"The Mississaugas of Scugog Island First Nation moved into southern Ontario from their former territory north of Lake Huron around the year 1700. The Michi Saagiig Anishnaabeg (Mississaugas) are a branch of the greater Anishnaabe Nation, one of the largest Indigenous Nations in Canada. From time immemorial, the Mississauga peoples secured all their needs from the surrounding environment by employing traditional ecological land management practices that encompassed hunting, fishing, planting, and harvesting for food and medicines. Manomin (Wild Rice), an important food staple, which grows in shallow water, was gathered in late summer using birch bark canoes. Today it continues to be an important cultural food source and the Mississauga peoples are actively working to restore this important component of the local aquatic ecosystems."***
>
> *- Mississaugas of Scugog Island First Nation*

5.3 Climate Change: Knowledge, Beliefs and Adaptive Actions in Durham Region

Awareness of the current and near future health risks of climate change is not well established. Although more than three-quarters of Durham Region residents are worried about climate change, most do not believe they will be personally harmed by it.

As per the guidelines outlined in the Ontario Public Health Standards (OPHS), public health units (PHUs) across Ontario are required to conduct surveillance and use these collected data to communicate risks to appropriate audiences. A key source of health-related behaviour data among Ontario adults 18 and older used by many PHUs is the Rapid Risk Factor Surveillance System (RRFSS) online and telephone survey. RRFSS data provide important information that helps support PHUs in planning and evaluating local programs and services, and informing education, awareness and advocacy efforts related to health behaviours.

From September to December 2022, DRHD participated in a RRFSS survey that examined the following information pertaining to climate change among approximately 260 randomly selected adults (18 and older) in Durham Region:

- Attitudes and responsibility towards climate action
- Climate beliefs – audience segmentation
- Dwelling adaptation practices and barriers
- Personal adaptation barriers and practices

The results of this survey are important for this vulnerability assessment as they identify attitudes and knowledge surrounding climate change, perceived risk, as well as adaptation practices and barriers to these practices. However, it is important to note that 260 respondents is a relatively small sample size. Consequently, there was not enough power to assess differences in these data across gender, income, and age categories, as well as municipality. For future surveillance efforts, these data are worthwhile re-examining once these questions have been asked again in a future RRFSS cycle, to improve the sample size and increase power for analysis.

5.3.1 Climate Change: Attitudes, Knowledge, and Views

Climate change is personally important to many Durham Region residents.

Respondents were asked if they are worried about climate change. Approximately three-quarters of Durham Region residents said they were extremely, very, or somewhat worried about climate change (**Figure 5.23**). The large majority (86%) of residents also stated that climate change is extremely, very, or somewhat important to them personally (**Figure 5.23**).

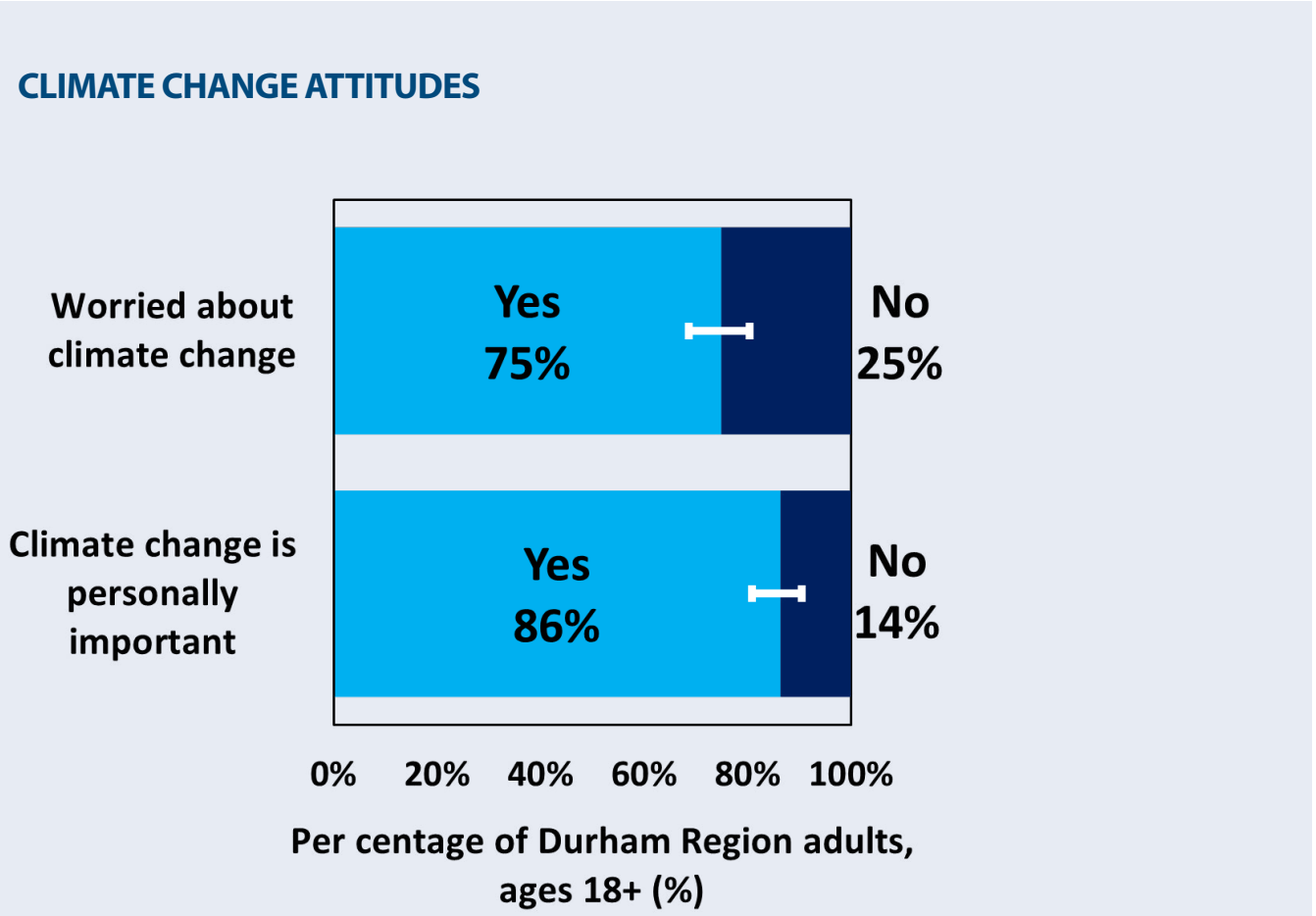


Figure 5.23 | Per centage of Durham Region adults (18 and older) who are worried about climate change and who report climate change is personally important to them.

Yes includes the following response categories: Extremely, very, somewhat. No includes the following response categories: Not too/not at all.

I 95% confidence interval

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department, 2022. Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

Climate Change Views

Approximately three-quarters of Durham Region residents are convinced climate change is happening.

Global warming's Six Americas audience segmentation tool from the Yale program on Climate Change Communication, was adapted for use with the RRFSS survey and relevant questions were asked of Durham Region adults during the January to April 2022 cycle. The tool assigns segments based on climate change views: alarmed, concerned, cautious, disengaged, doubtful and dismissive.

Alarmed individuals are fully convinced of the reality and seriousness of climate change and are already taking individual, consumer, and political action to address it. Concerned individuals are convinced that climate change is happening and a serious problem but have not yet engaged the issue personally. The cautious, disengaged, and doubtful segments represent different stages of understanding and acceptance, and none are actively involved. The dismissive segment is very sure it is not happening and individuals in this segment are actively involved as opponents. Due to the small sample size, the cautious, disengaged, and doubtful segments were collapsed into one category for analysis.

Climate change view segmentation results for the 2022 survey of Durham Region adults 18 and older, are illustrated in **Figure 5.24**. Just over one-third of Durham adults fall within the alarmed and concerned segments. About one-quarter of Durham adults are within different stages of understanding and acceptance. The remaining four per cent are dismissive, however, this estimate should be interpreted with caution due to high variability.

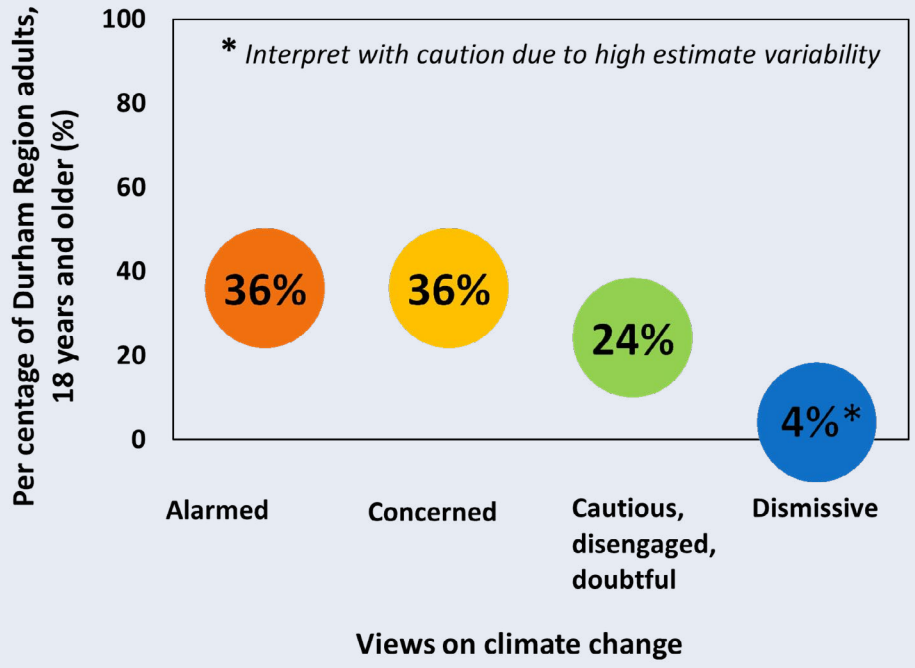


Figure 5.24 | Climate change view segmentation results for Durham Region adults, ages 18 and older, 2022.

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department, 2022. Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

Many Durham Region residents think climate change will have greater impacts in the future than in their own lifetime.

Respondents were asked how much they think climate change will harm them in their lifetime. More than half of respondents (53%) said climate change will cause little to no harm to them in their lifetime, and 33 per cent said it will cause a lot or moderate harm within their lifetime (**Figure 5.25**). However, when asked how much they think climate change will harm future generations of people, the proportion that said climate change will cause a lot or moderate amount of harm increased to 82 per cent (**Figure 5.25**). Only 11 per cent of respondents said climate change will result in little to no harm to future generations of people.

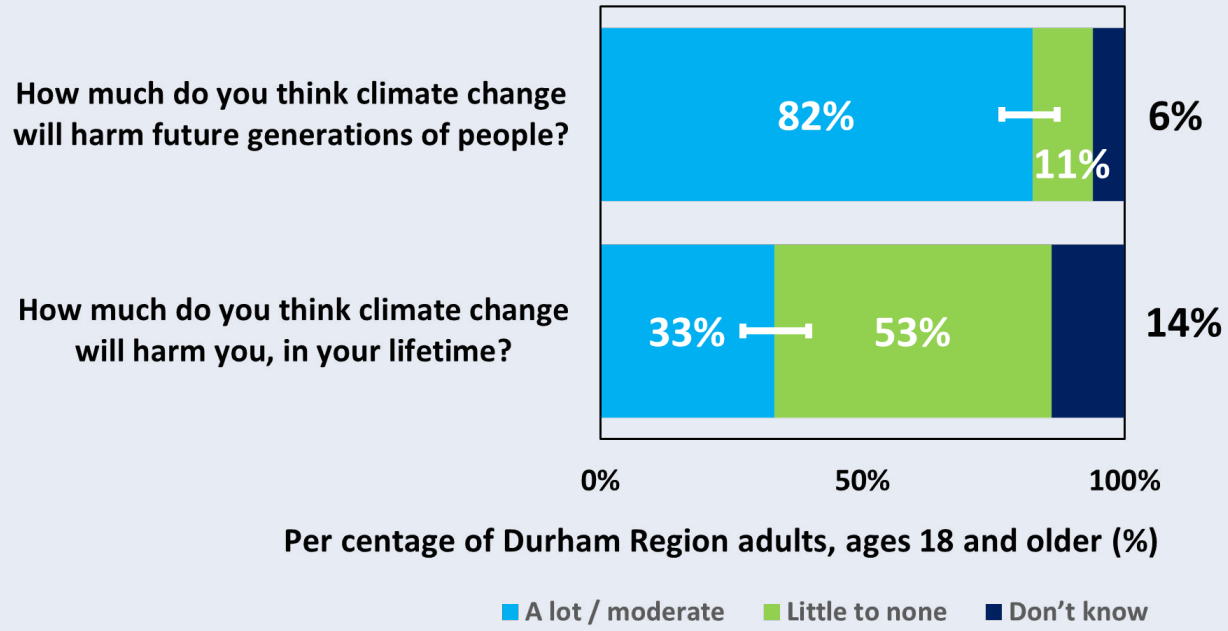


Figure 5.25 | Perceived climate change risks, Durham Region adults ages 18 years and older, 2022.

I 95% confidence interval

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department, Cycle 40 (January to April 2022). Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

5.3.2 Climate Change: Adaptation Practices and Barriers

Many Durham residents believe that both individuals and governments are responsible for providing protection from the impacts of climate change and many residents have already begun to take actions to protect themselves from negative health impacts.

Respondents were asked questions to assess who they believe are responsible for protecting people from the impacts of climate change. Most respondents (88%) either strongly or somewhat agreed that individuals are responsible for protecting themselves from the impacts of climate change. A smaller proportion of respondents (78%) either strongly or somewhat agreed that governments are responsible for protecting their citizens from the impacts of climate change.

Additionally, when respondents were asked about how often they felt motivated to protect themselves from the impacts of climate change, 69 per cent said they always, often, or sometimes felt motivated to protect themselves in the past year.

Adaptation Practices

Many Durham Region residents have already begun to take actions to avoid and reduce their exposures to outdoor climate hazards.

Personal and dwelling adaptation practices responses are shown in **Figure 5.26**.

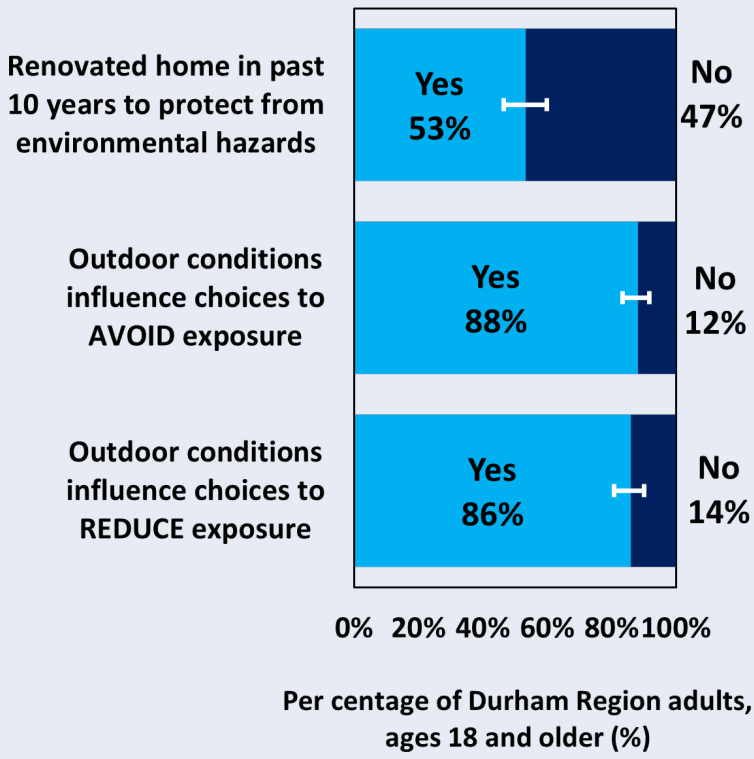


Figure 5.26 | Reported dwelling and personal adaptation practices reported by Durham Region adults (18+), 2022.

I 95% confidence interval

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department, Cycle 40 (January to April 2022). Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

Dwelling adaptation practices

When asked about dwelling adaptation practices, residents were asked about changes they've made to improve their home that help to protect from possible environmental hazards that could affect their health. Fifty-three per cent of respondents indicated they have renovated their home in the past 10 years to protect from possible environmental hazards that could affect their health (**Figure 5.26**).

Most common response for housing renovation was new roof and two other frequent responses, but less common, include door replacement renovations and air ventilation or purifiers.

Personal adaptation practices

Respondents were asked questions related to what they would do to protect themselves from outdoor conditions that could affect their health, for example extreme heat or cold, poor air quality or severe storms. The majority of respondents said they make choices to either avoid (88%) or reduce (86%) their exposure to outdoor conditions that could affect their health (**Figure 5.26**).

Respondents were also asked several questions regarding their knowledge of adaptation practices and any barriers they may experience when trying to protect their health from potential climate change impacts. Over 90 per cent of respondents stated they know what they can do to protect their health from outdoor conditions and have the resources they need, as well as support form family, friends, or neighbours in order to do so (**Figure 5.27**). However, it is possible that respondents may be overestimating their self-reported adaptive knowledge and available resources. Preparedness is a very abstract concept. Since the majority of respondents do not believe they will be personally harmed by climate change, there may be a disconnect between what the believe they are prepared for and what the potential dangers and risks of climate change actually are.

Self Reported Adaptive Capacity

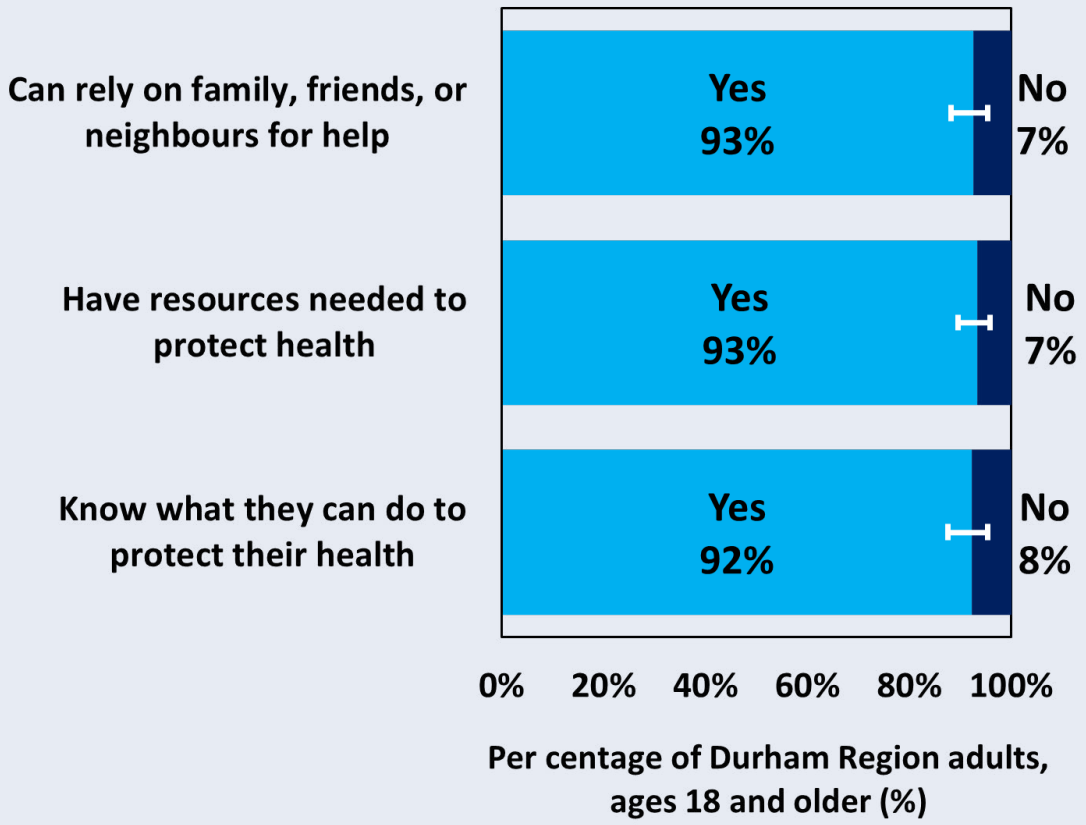


Figure 5.27 | Self reported knowledge of adaptation practices and available resources for protecting one's health from outdoor conditions, Durham Region adults (18+), 2022.

I 95% confidence interval

Data source: Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department, Cycle 40 (January to April 2022). Data collected by the Institute for Social Research (ISR) at York University, Toronto, Canada.

Additional climate change-related modules will be asked in future RRFSS surveys to better understand Durham Region residents' knowledge, attitudes, and adaptative practices and behaviours, to help support adaptation planning.

5.4 Next Steps: Building Resilience to Climate-Related Health Impacts

Durham Region is experiencing the impacts of climate change, yet most residents do not believe they will be personally harmed by it. There is a need to better understand and communicate the near and long-term health impacts of climate change. Durham Region's climate and health vulnerability assessments are an essential step toward understanding local health risks and disparities and building healthy, climate resilient communities.

Durham Region is already experiencing the impacts of climate change including extreme heat events, poor air quality, and extreme weather. Yet, most Durham residents do not believe they will be harmed by climate change in their lifetime. This demonstrates a clear need to better understand the current, near future and long-term health impacts of climate change and to communicate these risks and potential adaptation measures to local decision makers, businesses, institutions, organizations, and residents.

Understanding the factors of climate vulnerability and the geographic, environmental, and sociodemographic characteristics of Durham Region is essential to assessing local health risks and developing appropriate action plans and community supports. Existing health disparities among Durham's Health Neighbourhoods emphasize the importance of sub-regional analysis in order to understand and respond to local health inequities that may be worsened by climate change. While everyone's health is affected by climate change, some priority populations experience greater risks of harm than others. In many cases, the health impacts of climate change disproportionately affect those already experiencing health inequities. Priority populations include older adults over age 65, infants, children and youth, Indigenous Peoples, racialized populations, people with disabilities, people who are pregnant, residents of remote communities, individuals who are socially and economically disadvantaged or isolated, and people who are living with pre-existing illness. [89] These categories are not discrete, and many people experience the intersecting influence of multiple, compounding risk factors. These compounding factors can make it difficult for some individuals to protect themselves from health risks. This is why broader public health action and community-level supports are required.

Identification of priority populations is ongoing and evolving as the experience of climate change intensifies, and impacts become more evident. It is therefore necessary to integrate high quality data and evidence with community engagement and dialogue to understand the unique needs, assets and lived experiences of priority populations and those who serve them. Identifying and understanding the experiences of those most at risk allows health systems, municipalities, community organizations and residents to plan and respond to the growing impacts of climate change.

This primer on climate change and health in Durham Region and the subsequent climate and health vulnerability assessments are an essential first step in this process. Each report will explore a single key climate change hazard that is expected to impact the health of Durham Region residents now and in the future. Special attention will be given to local populations and communities that may be worst affected by these hazards and least protected. Where possible the assessment will also highlight community strengths and assets that enhance climate change resilience. Lastly, they will establish a baseline for analysis in which future changes in risks and adaptation measures may be monitored and assessed.

It is clear that Durham Region residents care about climate change and are concerned about its impact on children and future generations. It is also clear the health effects of climate change are intensifying. There is great potential to build resilience and protect the health of our communities through climate change adaptation measures. These measures can also deliver immediate health benefits for everyone including better air and water quality, richer green spaces, stronger social support networks and healthier housing, neighbourhoods, and community services.

Helpful Resources

Want to learn more?

This section provides a summary of key resources to help understand Durham Region's diverse communities and highlight trends in sociodemographics and health which may impact area communities in the future, terms of sensitivity, exposure, and vulnerability to negative health impacts as a result of our changing climate. While this list provides an overview of existing literature, it is not a complete list. Instead, it is intended as a starting point for learning and perhaps inspiring discussion and collaboration.

AT HOME IN DURHAM: FIVE-YEAR REVIEW, 2019 [3]

The Regional Municipality of Durham

2019

At Home in Durham is the Region's current housing plan which aims to improve affordability and access to housing, protect the existing affordable housing supply, encourage housing diversity, and build capacity in the housing system.

BUILDING ON HEALTH IN PRIORITY NEIGHBOURHOODS

Durham Region Health Department (DRHD)

2015

This report identifies seven Priority Neighbourhoods in Durham Region and introduces some of the community assets and health priorities in these Neighbourhoods as part of the preliminary analysis.

DURHAM REGION'S HEALTH NEIGHBOURHOODS

Durham Region Health Department

Last updated: June 2022

durham.ca/neighbourhoods

This is the online landing page for DRHD's Health Neighbourhoods initiative. Durham Region has 50 Health Neighbourhoods and presents 96 indicators by neighbourhood and municipality to tell us about the demographics and health of our communities. From this link it is possible to access the map viewer (an interactive map that views information by Health Neighbourhood), indicator summaries (interactive summaries that show how an indicator ranges across Durham Region using maps and tables) and Neighbourhood profiles (interactive profiles which give information for a particular Neighbourhood or municipality and show how the area compares with Durham Region and Ontario). Reports and FAQs are also available.

FACT SHEET: SUPPORTING HEALTH EQUITY THROUGH THE BUILT ENVIRONMENT [84]

BC Centre for Disease Control

2017

This Fact Sheet offers evidence-informed principles that support health equity through interventions in the built environment. These principles are based on the results a scoping review and explores health equity through measures of socioeconomic deprivation.

POINT-IN-TIME COUNT REPORT 2021 – MEASURING THE SCOPE AND NATURE OF HOMELESSNESS IN DURHAM

Community Development Council Durham & The Region of Durham

2021

This report provides a snapshot of the nature of homelessness in Durham Region in 2021 based on the Point-in-Time (PiT) Count. These findings include the total number of people counted as homeless in the Region within a 24-hour period, basic demographics of survey participants, and other indicators of how and why people were experiencing homelessness in Durham Region.

RACIALIZED PEOPLE: EQUITY & INCLUSION LENS SNAPSHOT – VERSION 2016 [9]

City of Ottawa, City for All Women Initiative

2016

Although this report focuses on racialized people in Ottawa, it provides an excellent overview of barriers and inequities racialized people face. It also describes why the term "racialized" is preferred over "visible minority".

THE PRICE OF EATING WELL IN DURHAM REGION 2022 [51]

Durham Region Health Department

2022

This report provides a summary of household food insecurity in Durham Region including who is most affected, the burden on the health care system, and how much it costs each month to eat a nutritious and health diet.

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APPENDIX 5.1

Sociodemographic and Health Data for Durham's Local Municipalities

Life Expectancy and Premature Mortality

Durham Region residents are fortunate to have a long-life expectancy and relatively low premature mortality rates, however, clear socioeconomic gradients are observed across these indicators. **Table A5.1.1** provides a summary of the most recent estimates of life expectancy for females and males, by municipality.

Table A5.1.1 | Average life expectancy at birth[26] for males and females in Durham Region, by municipality (2014 to 2018 estimates).

MUNICIPALITY	LIFE EXPECTANCY (YEARS)	
	FEMALES	MALES
Pickering	84.0	81.1
Ajax	84.7	81.0
Whitby	83.2	80.8
Oshawa	81.4	77.6
Clarington	82.5	79.9
Scugog	83.7	80.4
Uxbridge	85.2	80.3
Brock	79.3	74.8

Data source: Life expectancy (Deaths, 2014-2018, Ontario Ministry of Health and Long-Term Care, IntelliHealth Ontario & 2016 Canadian Census, Statistics Canada).

26 Life expectancy refers to how many years a newborn girl or boy is likely to live based on the current mortality rate.

Notable trends include:

- Across all municipalities, females experience a higher average life expectancy at birth compared to males.
- Life expectancy varies noticeably across municipalities, and even more so, by Health Neighbourhood, which are small geographic units the Durham Region Health Department (DRHD) uses to better understand health and wellbeing of our communities.
- Brock has the lowest average life expectancy at birth for both males and females, whereas Ajax has the highest life expectancy for females and Pickering has the highest life expectancy for males.
- The social-economic gradient is even more apparent when life expectancy is explored at the Health Neighbourhood geographic level, **Figure A5.1.1.**
    - Although Brock has the lowest life expectancy at the municipal level, three Health Neighbourhoods in Oshawa (Lakeview, Gibb west, and Downtown Oshawa) have lower life expectancies for males.
    - For females, one Health Neighbourhood in Clarington (Bowmanville Central) and three in Oshawa (Gibb West, Downtown Oshawa, and Hillsdale) have lower life expectancies than Brock.
    - These differences highlight the importance of looking below Regional or even sometimes municipal estimates when trying to understand inequities in health and wellbeing.

Figure A5.1.1 | Life expectancy at birth for females (right) and males (left), by Health Neighbourhood (2014-2018).

Red indicates health neighbourhoods with the lowest life expectancy in years.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Life expectancy at birth for females and males., Available at: durham.ca/neighbourhoods. Data Source: Deaths, 2014-2018, Ontario Ministry of Health and Ministry of Long-term Care, IntelliHEALTH Ontario & 2016 Census, Statistics Canaada.

Premature mortality is a measure of unfulfilled life expectancy and refers to deaths that occur before the age of 75. Since the deaths of younger people are often preventable, the premature mortality rate is a measure that gives more weight to the death of younger people than older people. **Table A5.1.2** provides a summary of the most recent age standardized premature mortality rates for males and females in Durham Region, split by municipality.

Notable trends include:

- Across all municipalities, males experience higher premature mortality rates (deaths per 1,000) compared to females.
- Premature mortality rates for both males and females vary substantially across municipalities.
- Brock has the highest premature mortality rate for females, whereas Oshawa has the highest premature mortality rate for males.

Table A5.1.2 | Age-standardized premature mortality [27] rates for males and females in Durham Region, by municipality (2012 to 2016 estimates).

MUNICIPALITY	PREMATURE MORTALITY (DEATHS PER 1,000)	
	FEMALES	MALES
Pickering	8.4	12.8
Ajax	8.1	11.6
Whitby	9.5	12.1
Oshawa	13.8	20.1
Clarington	10.1	14.0
Scugog	9.3	11.9
Uxbridge	9.1	13.9
Brock	14.0	19.2

Data source: Premature mortality rate (Booth G, Homenauth E, Graves E, Ishiguro I, Jovanovska S. Indicators for Durham Region Health Neighbourhoods – Update, Applied Health Research Questions (AHRQ) 2019 0900 784 001. Toronto: Institute for Clinical Evaluative Sciences; 2019).

27 Premature mortality is calculated as the number of premature deaths in females or males aged 0 to 74 per 1,000 females or males in that age group. Premature deaths are those before the age of 75. The premature mortality rate was age-standardized using the 2011 Canadian census population. Standardization helps make better comparisons between different populations.

Older Adult Population (Ages 65+)

Durham's population is aging, and older adults are living longer and healthier than previous generations thanks to rapid advancements in healthcare. Durham's older adult population, those ages 65 years and older, was the only age category in the Region to experience noticeable growth from 2011 to 2021. **Table A5.1.3** provides a summary of the total older adult (65+) population for each municipality, population growth rates, and the proportion of older adults who live alone.

Table A5.1.3 | Per centage of the total population and population growth rate for older adults, ages 65 years and older, in 2016 and 2021, by municipality.

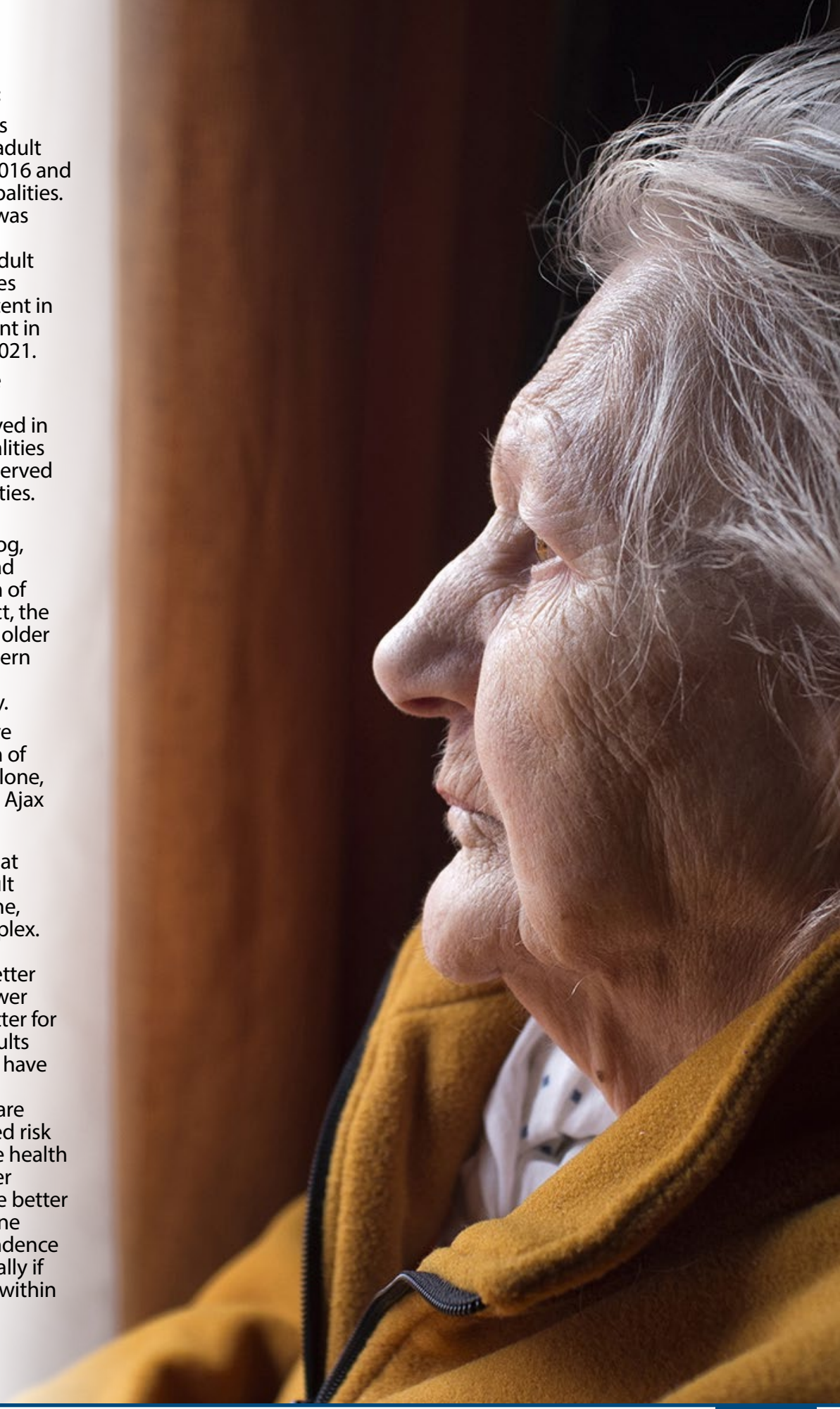
MUNICIPALITY	2016 POPULATION (%)	2021 POPULATION (%)	2016 to 2021 GROWTH RATE	2021 LIVE ALONE (%)
Pickering	14.1%	16.6%	22.1%	13.6%
Ajax	10.7%	13.1%	23.1%	13.0%
Whitby	12.2%	14.8%	24.1%	16.6%
Oshawa	15.9%	16.7%	14.5%	22.6%
Clarington	13.2%	15.4%	23.2%	14.7%
Scugog	20.0%	24.2%	18.4%	16.2%
Uxbridge	17.1%	21.4%	22.1%	16.5%
Brock	19.3%	22.0%	20.8%	21.1%

Data source: Statistics Canada, 2016 & 2021 Census of Population.

Notable trends include:

- Substantial growth was observed in the older adult population between 2016 and 2021 across all municipalities. However, this growth was not consistent among municipalities. Older adult population growth rates ranged from 14.5 per cent in Oshawa, to 24.1 per cent in Whitby from 2016 to 2021.
- Excluding Oshawa, the greatest growth in this population was observed in the southern municipalities with lower growth observed in northern municipalities.
- In 2021, the northern municipalities of Scugog, Uxbridge and Brock had the highest proportion of older adults. In contract, the smallest proportion of older adults live in the southern municipalities of Ajax, Clarington, and Whitby.
- Oshawa and Brock have the highest proportion of older adults who live alone, whereas Pickering and Ajax have the lowest.

It is important to note that in terms of the older adult population who live alone, impact on health is complex. Increases and higher percentages could be better or worse for health. A lower percentage could be better for health because older adults living with others would have more social and physical support and those who are alone may be at increased risk of experiencing negative health events. However, a higher percentage could also be better as older adults living alone could represent independence and good health, especially if they are well supported within their communities.



Municipal Population Growth

Most Durham Residents reside in the southern lakeshore communities of Pickering, Ajax, Whitby, Oshawa, and Clarington. As illustrated in **Figure A5.1.2**, these communities have experienced the highest rates of population growth over the past 20 years. In contrast, the rural communities of Brock, Scugog, and Uxbridge have seen much slower rates of growth.

In the southern urban municipalities, immigration has been the predominant driver of population growth. The southern municipalities, particularly Ajax, Oshawa, and Whitby, are the areas most often chosen for newcomers [28] to settle when they immigrate to Durham (**Figure A5.1.3**). Approximately 96.8 per cent of Durham's total immigrant population lives in the southern area municipalities. [1]

28 This term is used when referring to Canadian census data on immigrants and includes non-permanent residents as well. Statistics Canada uses the term "immigrant" instead of "newcomer". Based on the Statistics Canada definition, an "immigrant" refers to a person who is or has been a landed immigrant or permanent resident. A non-permanent resident refers to a person from another country with a usual place of residence in Canada and who has a work or study permit or who has claimed refugee status (asylum claimant).

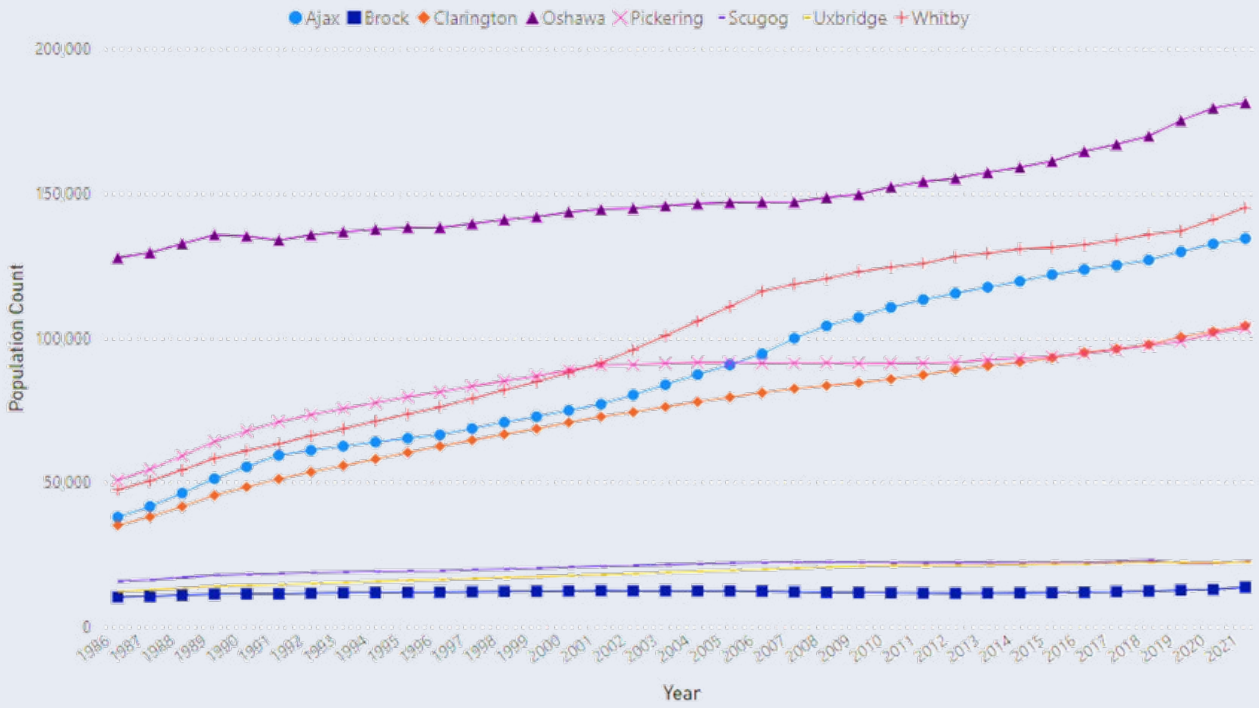


Figure A5.1.2 | Yearly population counts for each area municipality in Durham Region from 1986 to 2021.

Figure adapted from the Durham Region Population Data Tracker, Trends by Year Dashboard, Available at: durham.ca/healthstats.

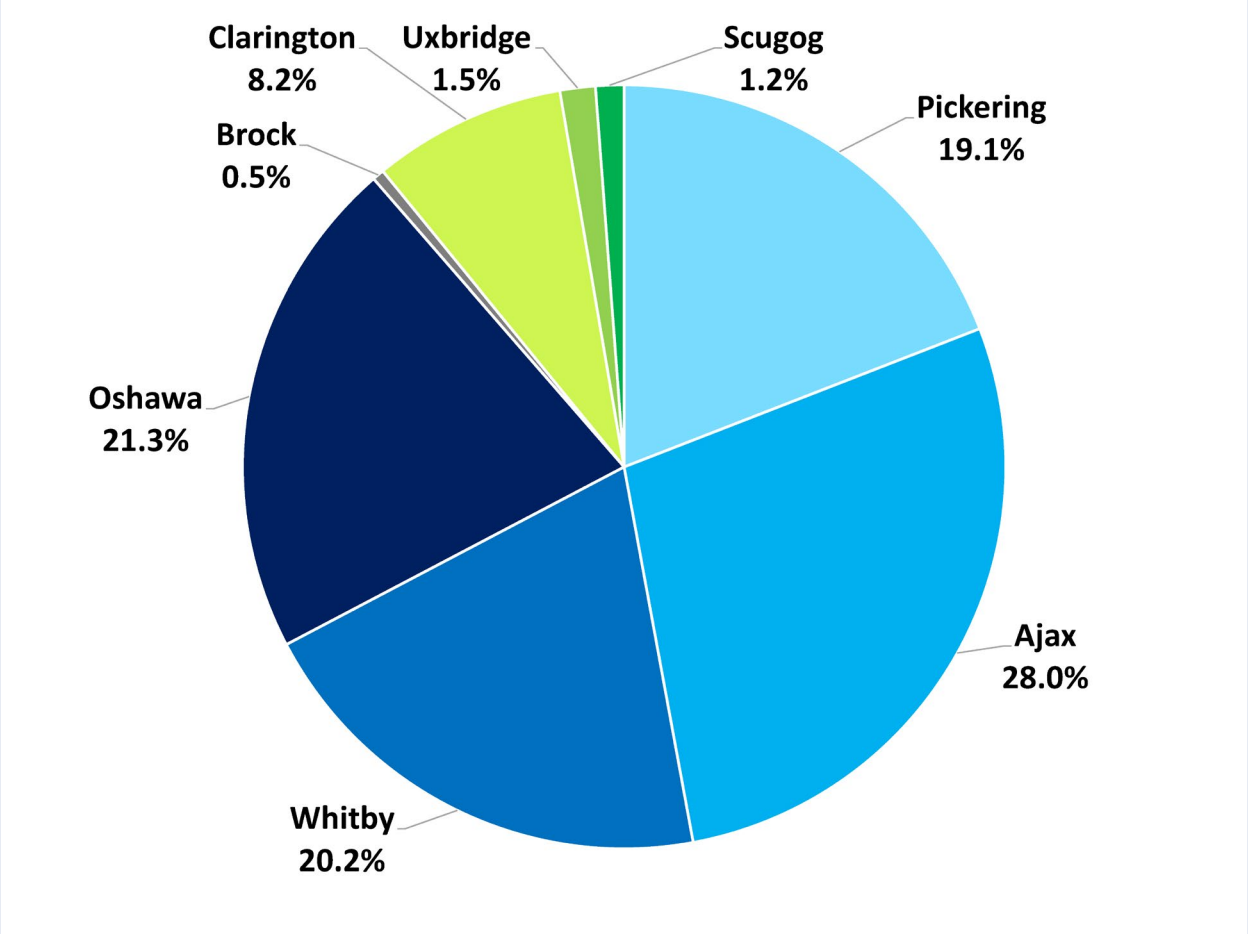


Figure A5.1.3 | Breakdown of where newcomers choose to settle in Durham Region.

Figure adapted from the 2021 Census of Population – Citizenship and immigration, ethnocultural and religious composition, mobility and migration (Release 6), File: D01-03, Report #2022-INFO-102. [4]

Racial and Ethnic Diversity

The proportion of Durham's population that identify as belonging to a racialized group has increased consistently from 2011 to 2021. The proportion of each municipality that identify as a racialized person is listed in **Table A5.1.4**.

Table A5.1.4 | Racial, ethnic, and linguistic characteristics of Durham Region's local municipalities (2021).

MUNICIPALITY	RACIALIZED POPULATION	CANNOT SPEAK ENGLISH WELL	DO NOT SPEAK ENGLISH AT HOME
Pickering	51.9%	1.4%	12.9%
Ajax	64.6%	2.0%	16.5%
Whitby	35.4%	1.3%	9.9%
Oshawa	28.9%	1.1%	8.7%
Clarington	16.5%	1.1%	4.6%
Scugog	5.2%	0.5	1.5%
Uxbridge	8.0%	0.3%	3.2%
Brock	4.7%	0.3%	2.2%

Racial and ethnic diversity varies considerably across Durham Region, with greater diversity both ethnically, racially, and linguistically, along the southeastern municipalities of Pickering, Ajax, and Whitby (**Table A5.1.4**). These three municipalities have the highest proportion residents who identify as belonging to a racialized group[29] , have limited English language proficiency or cannot speak English well enough to hold a conversation, and predominantly speak a language other than English while at home. In contrast, the northern municipalities of Scugog, Uxbridge and Brock have the lowest levels of ethnic, racial, and linguistic diversity.

29 In this report, we use the term "racialized group", whereas Statistics Canada uses the term "visible minorities". This refers to "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour" [5], as defined by the Employment Equity Act.

Living with Low Income

Table A5.1.5 presents a breakdown by age category of the total number and percentage of people living with low income in Durham Region's local municipalities based on 2020 estimates. [17] It is clear there is a wide range in the proportion of households living with low income across municipalities.

Table A5.1.5 | Percentage of children, older adults and the total population in households living with low income, based on the low-income measure, after tax (LIM-AT)[30] , by municipality.

	AGE GROUP					
	CHILDREN – 5 YEARS AND UNDER		OLDER ADULTS – 65 YEARS AND OLDER		TOTAL POPULATION – ALL AGES	
MUNICIPALITY	2016	2021	2016	2021	2016	2016
Pickering	12.2%	7.2%	7.3%	6.4%	8.4%	5.3%
Ajax	12.4%	8.0%	8.1%	8.4%	9.4%	5.5%
Whitby	10.2%	7.3%	7.0%	7.8%	7.7%	5.4%
Oshawa	22.2%	14.9%	9.8%	10.0%	14.5%	10.2%
Clarington	7.7%	5.1%	5.8%	6.4%	6.4%	4.8%
Scugog	7.3%	3.9	8.1%	7.5%	7.9%	6.5%
Uxbridge	6.9%	4.0%	9.2%	9.3%	7.3%	5.9%
Brock	10.6%	4.2%	11.4%	14.8%	12.4%	8.7%
Durham Region	13.3%	8.8%	8.1%	8.3%	9.7%	6.6%

Data source: Statistics Canada, 2016 & 2021 Census of Population.

30 The LIM-AT is based on the median adjusted after tax income of all households in Canada. A household is considered to be living with low income if their income after tax is lower than the Canadian median income after tax for a household of the same size.

Obesity

Table A5.1.6 presents the self-reported obesity rates for Durham Region adults, 18 years and older, by municipality. The following trends can be observed:

- The percentage of adults who are obese increased across all municipalities over the two time periods, except for Scugog and Brock. However, this increase is not statistically significant which may be partially due to small sample sizes.
- Brock, Clarington, and Oshawa have the highest obesity rates.
- Ajax, Scugog, and Whitby have the lowest obesity rates.

Table A5.1.6 | Obesity among Durham Region adults (18+), by municipality (2009 to 2014 vs. 2014 to 2018).

MUNICIPALITY	PER CENTAGE OF OBESITY AMONG ADULTS		COMPARISON OVER TIME
	2019 to 2013	2014 to 2018	
Pickering	18%	21%	No change
Ajax	16%	20%	No change
Whitby	19%	21%	No change
Oshawa	23%	27%	No change
Clarington	22%	26%	No change
Scugog	19%	18%	No change
Uxbridge	21%	24%	No change
Brock	30%	27%	No change

Data source: Durham data – Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department and Institute for Social Research (ISR), York University, 2009-2013 & 2014-2018

Indicators of Health and Wellbeing

Table A5.1.7 provides a list of the proportion of Durham Region adults, 18 years and older, who perceive their physical and mental health as excellent or very good, based on the 2014 to 2018 RRFSS surveys.

The following trends can be observed:

- Regardless of municipality, Durham Region residents' perception of their mental health is noticeably better than their physical health.
- Residents of Brock had the lowest proportion of residents who rated their physical or mental health as excellent or very good. Less than half of residents perceive their physical health as excellent or very good.
- Scugog and Whitby had the highest proportion of residents who rated their physical health as excellent or very good.
- Ajax, Scugog and Whitby that the highest proportion of residents who rated their mental health as excellent or very good.

Table A5.1.7 | Proportion of Durham Region adults (18+) who perceive their physical and mental health as excellent or very good (2014-2018).

MUNICIPALITY	PHYSICAL HEALTH	MENTAL HEALTH
Pickering	57%	70%
Ajax	57%	74%
Whitby	60%	72%
Oshawa	52%	67%
Clarington	58%	67%
Scugog	62%	73%
Uxbridge	56%	65%
Brock	46%	62%

Data source: Durham Region Data, Rapid Risk Factor Surveillance System (RRFSS), Durham Region Health Department and Institute for Social Research, York University, 2014-2018.

Table A5.1.8 provides a summary of a few chronic disease health indicators by municipality. All of these indicators, excluding cardiovascular disease (CVD) hospitalization rates are standardized by age and sex, which helps make better comparisons between populations.

The following municipal trends can be observed:

- Childhood asthma prevalence rates [31] vary substantially by municipality, ranging from 11.5% to 17.9%. Higher asthma rates are observed in the urban municipalities in the south and lower rates are observed in the northern municipalities, as easily seen by the concentration of dark red in the map depicted in **Figure A5.1.4**.

31 This indicator reflects the number of children aged 0 to 14 years diagnosed with asthma, per 100 children. The prevalence was standardized by age and sex using the 1991 Canadian Census population. Insurance Plan (OHIP) claims with an asthma diagnostic code or a hospital admission for asthma.

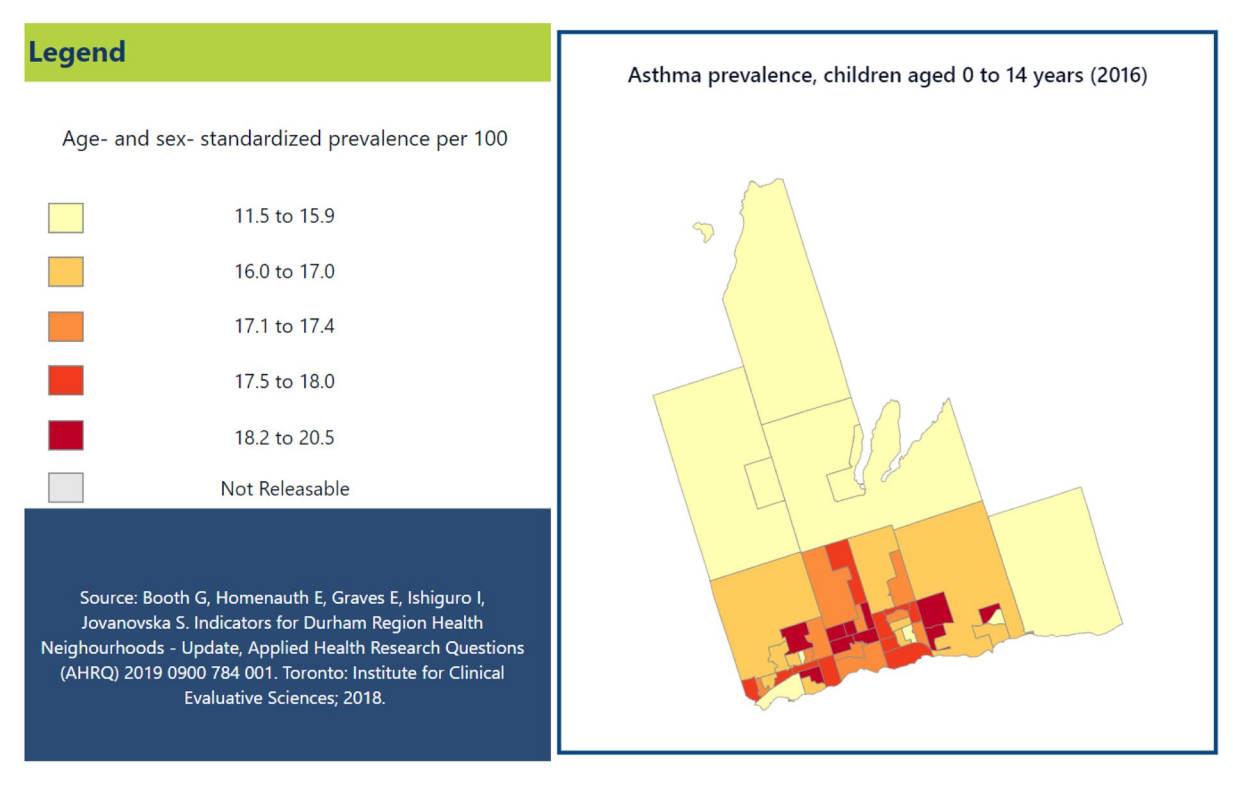


Figure A5.1.4 | Age and sex standardized asthma prevalence, children aged 0 to 14 years (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest asthma prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Asthma prevalence in children 2016., Available at: durham.ca/neighbourhoods.

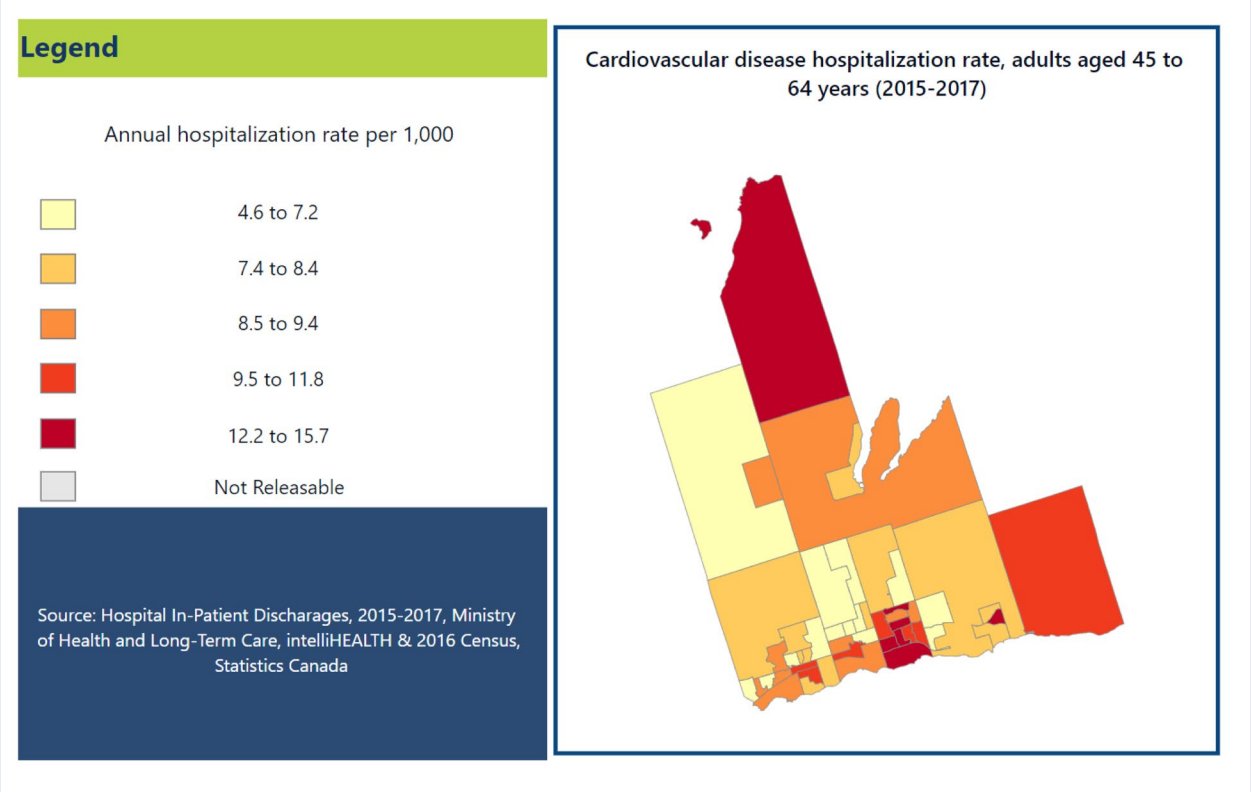


Figure A5.1.5 | Annual cardiovascular disease hospitalization rate, adults aged 45 to 64 years (2015-2017) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest asthma prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Asthma prevalence in children 2016., Available at: durham.ca/neighbourhoods.

- CVD hospitalization rates vary substantially across municipalities and range from 7.1 to 13.0 per 1,000. CVD hospitalization rates do not display any noticeable geographic trends (**Figure A5.1.5**). The lowest rates are seen in Whitby and Uxbridge, and the highest rates are seen in Brock and Oshawa.

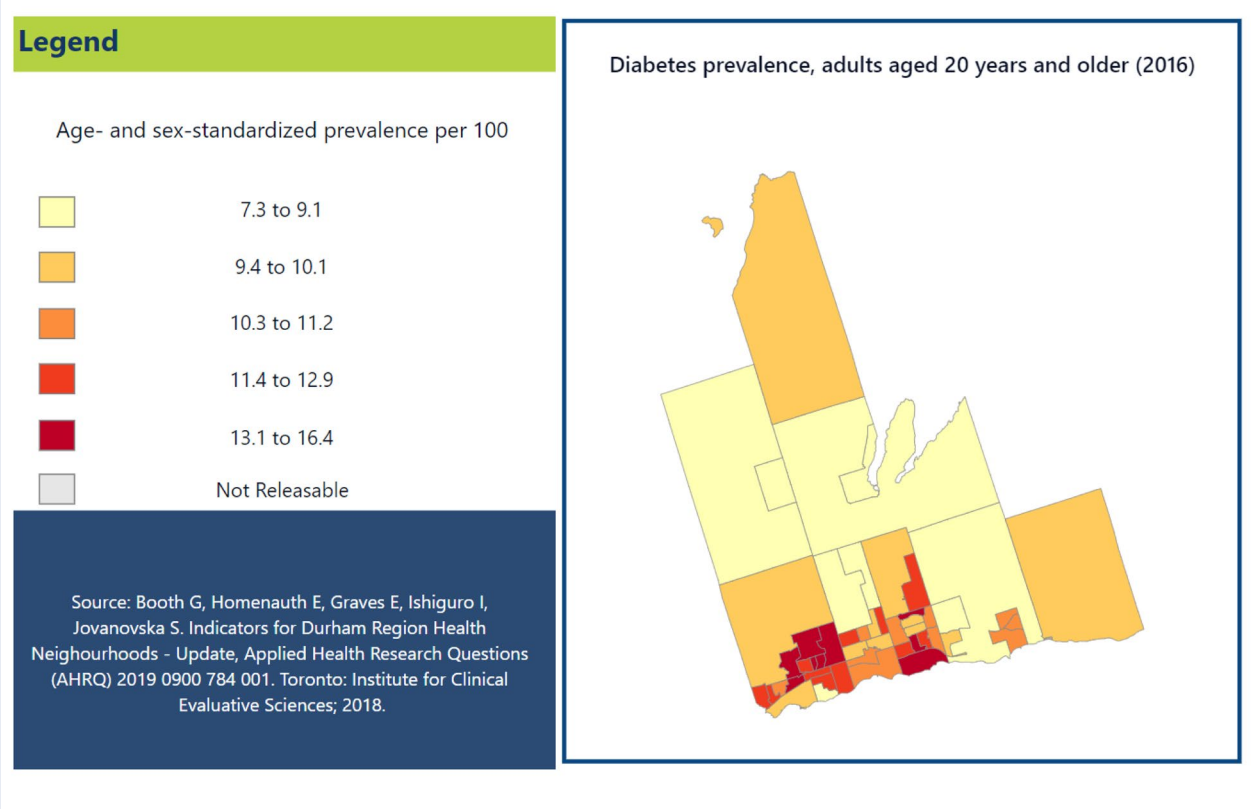


Figure A5.1.6 | Age and sex standardized diabetes prevalence, adults aged 20 years and older, (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest diabetes prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Diabetes Prevalence 2016., Available at: durham.ca/neighbourhoods.

- Diabetes prevalence rates [32] vary substantially across municipalities, ranging from 7.5 to 13.2 per cent. Diabetes prevalence seems to follow both a north – south and east – west geographic pattern, with the highest rates observed in the southwestern municipalities like Ajax, Pickering, and Whitby (**Figure 5.1.6**).

32 the prevalence of diabetes in people aged 20 years and older, per 100 people in that age group. A patient is said to have diabetes if, within a two-year period, they had at least two OHIP claims with a diabetes diagnostic code or one selected diabetes related OHIP service claim, or a hospital admission for diabetes.

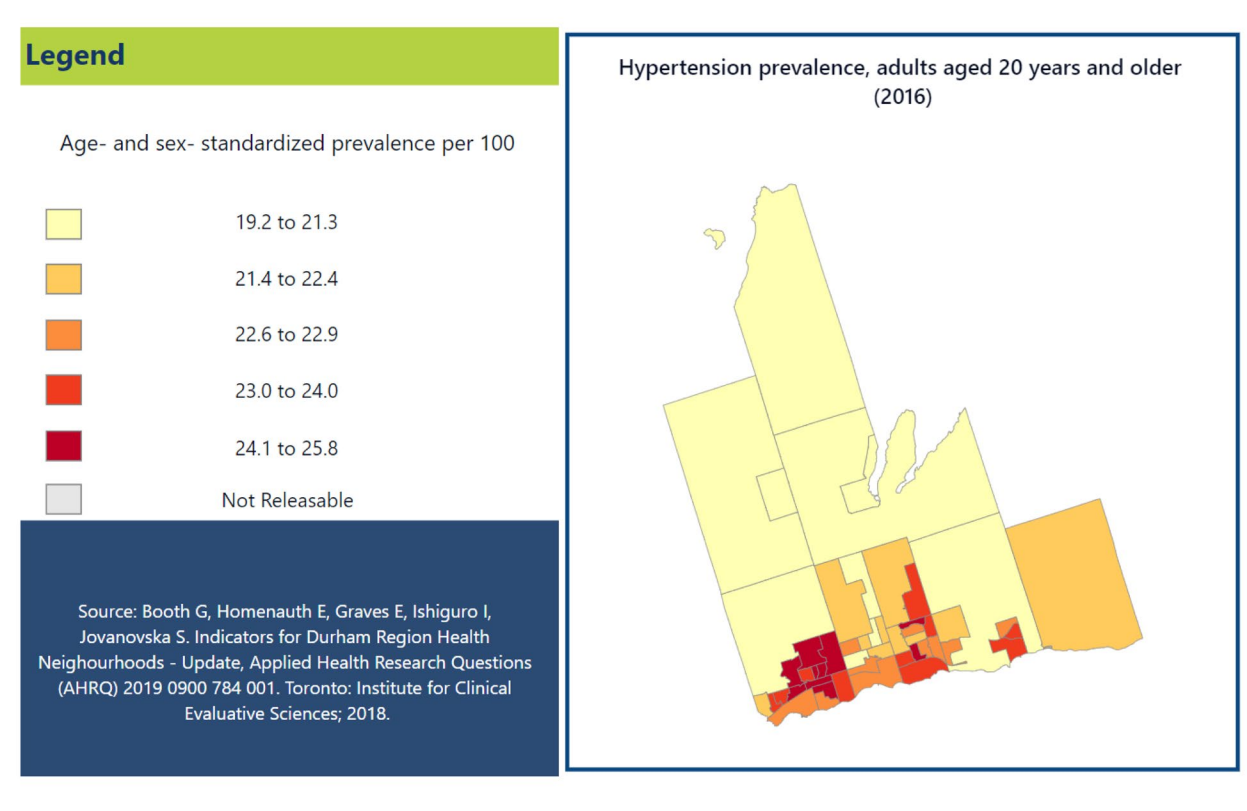


Figure A5.1.7 | Age and sex standardized hypertension prevalence, adults aged 20 years and older, (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest hypertension prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Hypertension Prevalence 2016., Available at: durham.ca/neighbourhoods.

- Hypertension[33] , or high blood pressure, prevalence varies from 19.4 per cent to 24.4 per cent. Prevalence rates of hypertension follow a similar geographic pattern as the one described for diabetes prevalence, with the highest rates observed in the southwestern municipalities (**Figure 5.1.7**).

33 The prevalence of hypertension, or high blood pressure, in adults aged 20 years and older, per 100 adults in that age group. A patient is said to have hypertension, if, within a two-year period, they had at least two OHIP claims with a hypertension diagnosis code, or a hospital admission for hypertension.

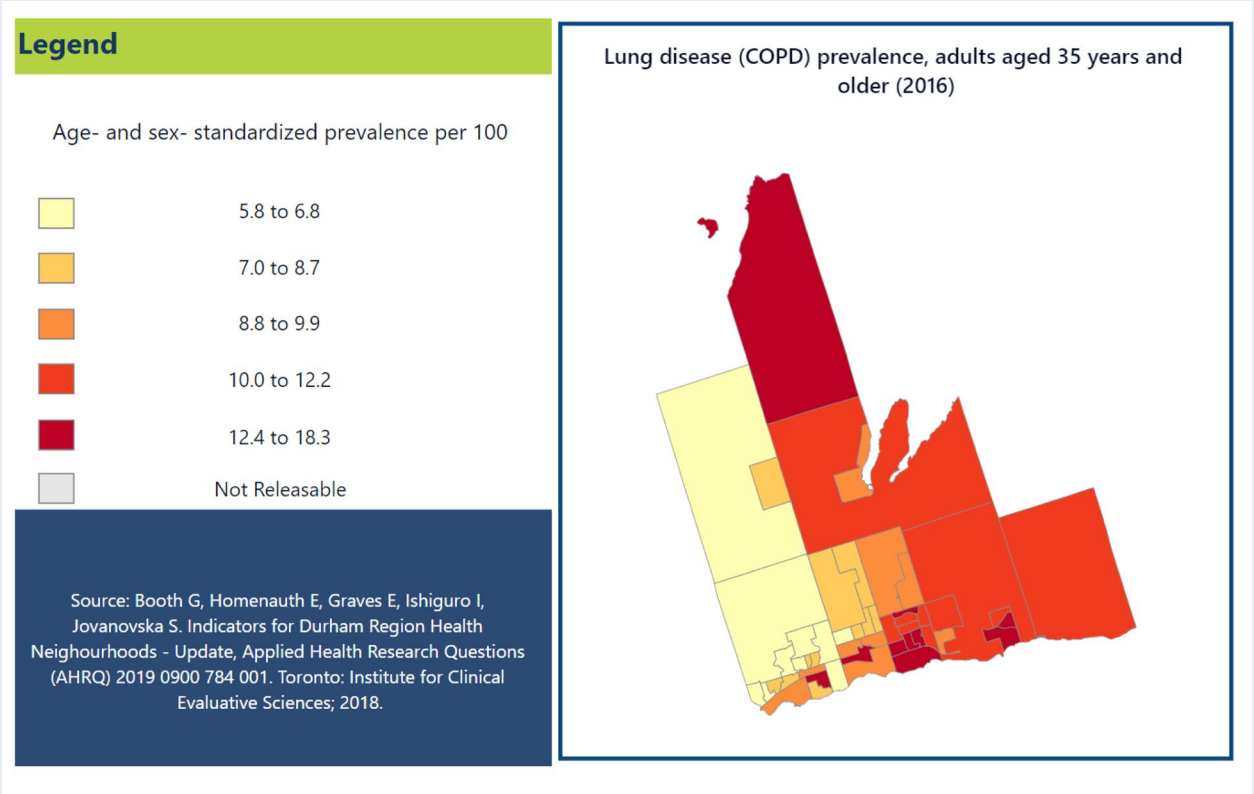


Figure A5.1.8 | Age and sex standardized COPD prevalence, adults aged 35 years and older, (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest COPD prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Lund disease (COPD) prevalence, 2016., Available at: durham.ca/neighbourhoods.

- COPD prevalence[34] rates vary substantially across municipalities, with a very noticeable east – west trend (**Figure 5.1.8**). The highest prevalence rates are observed in the eastern municipalities of Brock, Scugog, Clarington and Oshawa.

34 The prevalence of COPD in people aged 35 years and older, per 100 people n that age group. COPD is a lung disease that includes chronic bronchitis and emphysema. A patient is said to have COPD if, within a two-year period, they had at least one OHIP claim with a COPD diagnostic code or a hospital admission for COPD.

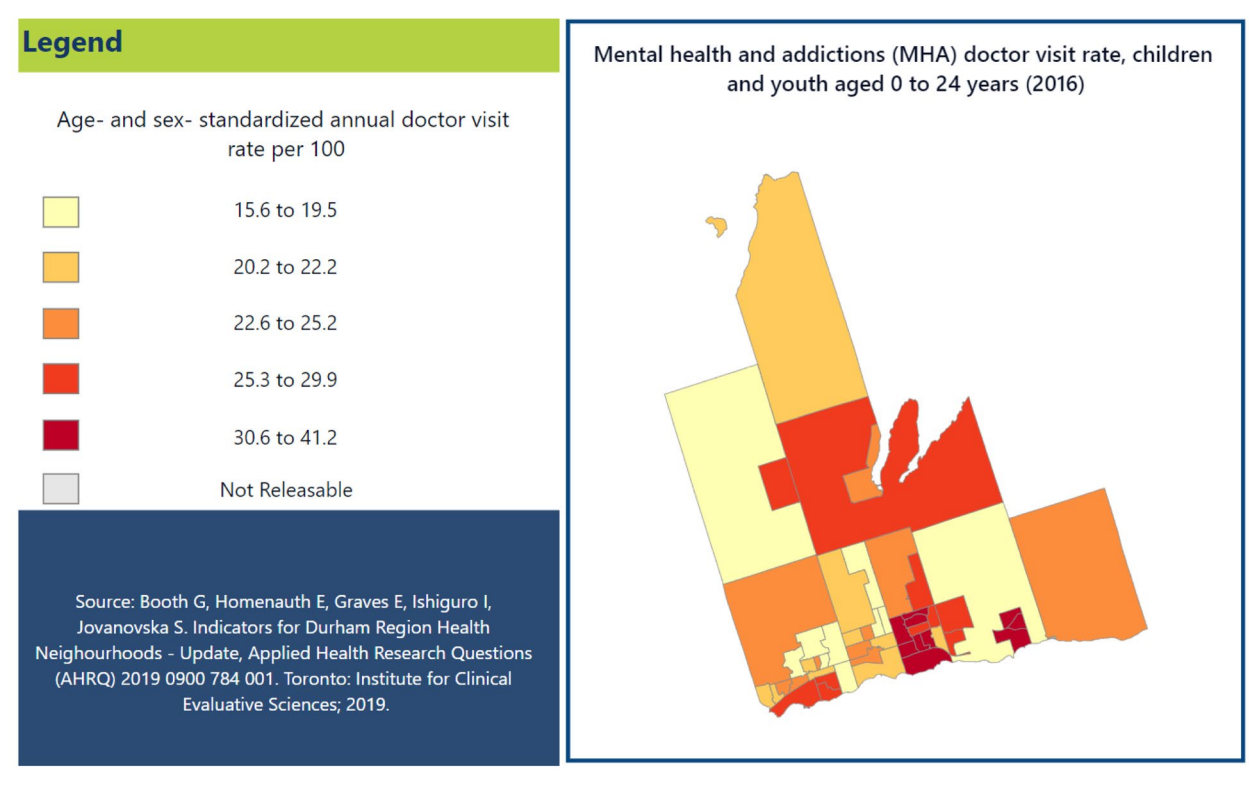


Figure A5.1.9 | Age and sex standardized mental health and addictions doctor visit rate for children and youth aged 0 to 24 years, (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest COPD prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Lund disease (COPD) prevalence, 2016., Available at: durham.ca/neighbourhoods.

- Mental health and addictions (MHA) doctors' visits[35] (**Figure A5.1.9**) and MHA emergency department (ED) visits [36](**Figure A5.1.10**) vary noticeably across municipalities. However, for both indicators, Oshawa and Clarington have the highest rates of doctor's office and ED visits for MHA, with Oshawa's annual visit rates even substantially higher than Clarington's.

35 The number of doctor visits for mental health and addictions (MHA) for children and youth aged 0 to 24 years, per 100 children and youth. Doctor's office visits include scheduled visits to family doctors, pediatricians, and psychiatrists. This includes visits for substance-related disorders, schizophrenia and other psychotic disorders, mood disorders, anxiety disorders, sleep disorders, behaviour disorders, sexual deviations, delays in development, family problems and issues with social adjustment.

36 Number of emergency department (ED) visits for MHA for children and youth aged 0 to 24 years, per 1,000 children and youth. This includes ED visits for substance-related disorders, schizophrenia and other psychotic disorders, mood disorders and anxiety disorders.

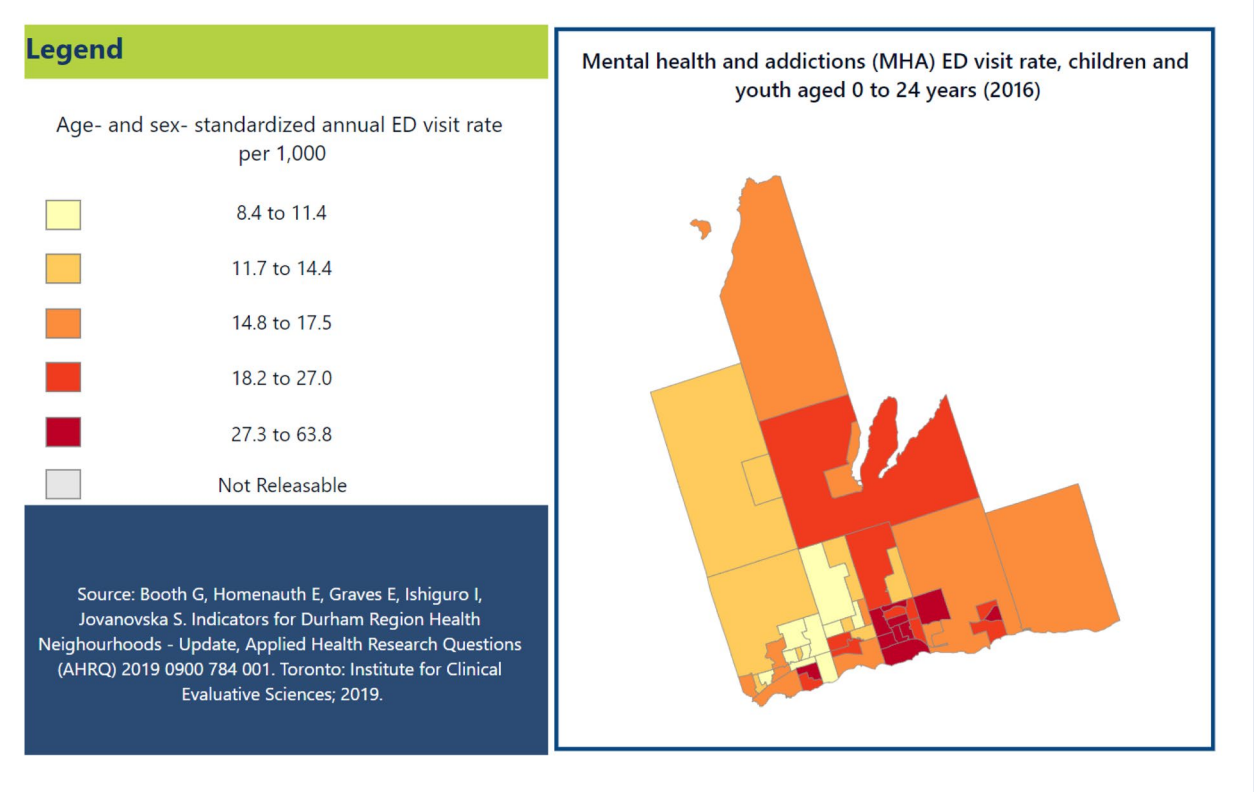


Figure A5.1.10 | Age and sex standardized mental health and addictions emergency department visit rate for children and youth aged 0 to 24 years, (2016) across Durham Region's 50 Health Neighbourhoods.

Red indicates health neighbourhoods with the highest COPD prevalence rates. Higher prevalences and increases are worse for health.

Figure adapted from the Health Neighbourhoods in Durham Indicator Summaries Dashboards, General Health Indicators, Lund disease (COPD) prevalence, 2016., Available at: durham.ca/neighbourhoods.

- It is important to point out that MHA doctor's visits impact on health is complex. Higher percentages can be better or worse for heath. Increases may be better for health if they result from decreased stigma and increased access to health care. However, increases may be worse for health if they reflect increases in the incidence and/or severity of mental illness and addictions. Unfortunately, this distinction cannot be untangled using the data we currently have available.

Table A5.1.8 | A summary of age and sex standardized health indicators by municipality.

MUNICIPALITY	Asthma prevalence in children (2016)	Cardiovascular disease hospitalization rate (2015-2017)	Diabetes prevalence (2016)	High blood pressure prevalence (2016)	COPD prevalence (2016)	MHA doctors visits (2016)	MHA emergency visits (2016)
Pickering	16.9%	8.1 per 1,000	11.6%	23.3%	7.8%	13.0 per 1,000	14.0 per 1,000
Ajax	17.5%	8.3 per 1,000	13.2%	24.4%	7.8%	19.5 per 100	12.9 per 1,000
Whitby	17.9%	7.1 per 1,000	10.2%	21.9%	8.9%	21.5 per 100	14.5 per 1,000
Oshawa	17.2%	11.5 per 1,000	11.3%	22.9%	12.7%	30.2 per 100	31.2 per 1,000
Clarington	17.4%	8.3 per 1,000	9.9%	22.3%	11.4%	28.4 per 100	21.2 per 1,000
Scugog	14.2%	9.0 per 1,000	8.2%	20.5%	9.9%	26.1 per 100	17.2 per 1,000
Uxbridge	12.6%	7.2 per 1,000	7.5%	19.4%	6.9%	24.2 per 100	13.9 per 1,000
Brock	11.5%	13.0 per 1,000	9.4%	21.3%	12.4%	21.0 per 100	15.1 per 1,000

Data sources: Asthma, diabetes, hypertension, COPD prevalence and MHA emergency department and doctor visits: Booth G, Homenauth E, Graves E, Ishiguro I, Jovanovska S. Indicators for Durham Region Health Neighbourhoods – Update, Applied Health Research Questions (AHRQ) 2019 0900 784 001. Toronto: Institute for Clinical Evaluative Sciences; 2018. Cardiovascular disease hospitalization rate: Hospital In-Patient Discharges, 2015-2017, Ministry of Health and Ministry of Long-Term Care, intelliHEALTH & 2016 Census, Statistics Canada.

- Excluding MHA doctors visits, higher values or increases in these indicators are worse for health. The impact on health for MHA doctors visits is complex and higher percentages can be better or worse for health. Increases may be better for health if they result from decreased stigma and increased access to health care. However, increases may be worse for health if they reflect increases in the incidence and/or severity of mental illness and addictions in the community.

Health is about more than lifestyle choices and having access to medical care when we are already sick. Our health and well-being are affected by out living conditions. The physical, social, and economic characteristics of an area can influence physical activity levels, how easy it is to get to work, the quality of housing, social interactions, access to health care, availability of nutritious foods, exposure to crime and violence, how we feel about where we live, exposure to environmental contaminants or hazards, our connection to nature and much more. All these factors affect our health and well-being.

For example, important differences in physical and mental health status between rural and urban populations have been well documented in the scientific literature. **Table A5.1.9** provides a summary of these differences.

Table A5.1.9 | Differences in physical and mental health status between urban and rural populations, as noted in the current scientific literature.

HEALTH IMPACT	URBAN POPULATIONS	RURAL POPULATIONS
Better for health	• Lower mortality rates resulting from injury, suicide, and motor vehicle accidents • Lower rates of smoking • Lower prevalence of overweight or obesity	• Less stressed • Stronger sense of community belonging
Worse for health	• Higher rates of cancer, infectious disease, and stress • Weaker sense of community belonging	• Poor or fair health • Highest rates of mortality from all causes, as well as from respiratory disease

Data source: Berry et al., 2020. [42]

The Opioid Crisis in Durham Region

The opioid crisis has escalated in both Durham Region and Ontario and is part of a larger context of increasing substance use harms. It has impacted men more than women, and particularly younger men. Opioid use affects people of all socio-economic statuses and in all housing situations, as exemplified by 2022 Region of Durham Paramedic Services (RDPS) data that 41 per cent of opioid-related RDPS calls were at a private residence (i.e., house, townhouse, condo, apartment). Opioids are one contributor to a broader pattern of substance-related harms [5]

Additional Resources

DURHAM REGION'S HEALTH NEIGHBOURHOODS

Durham Region Health Department

Last updated: June 2022

durham.ca/neighbourhoods

This is the online landing page for DRHD's Health Neighbourhoods initiative. Durham Region has 50 Health Neighbourhoods and presents 96 indicators by neighbourhood and municipality to tell us about the demographics and health of our communities. From this link it is possible to access the map viewer (an interactive map that views information by Health Neighbourhood), indicator summaries (interactive summaries that show how an indicator ranges across Durham Region using maps and tables) and Neighbourhood profiles (interactive profiles which give information for a particular Neighbourhood or municipality and show how the area compares with Durham Region and Ontario). Reports and FAQs are also available.

References

[1] The Regional Municipality of Durham, "2021 Census of population - Citizenship and immigration, ethnocultural and religious composition, mobility and migration (Release 6), File: D01-03. Report #2022-INFO-102," Commissioner of Planning and Economic Development, Whitby, 2002.

[2] Statistics Canada, "Census Profile. 2021 Census of population. Statistics Canada Catalogue no. 98-316-X2021001.," Statistics Canada, Ottawa, 2023.

[3] P. Berry, R. Schnitter and J. Noor, "Climate change and health linkages," in Health of Canadians in a changing climate: Advancing our knowledge for action, Ottawa, ON, Government of Canada, 2022.

[4] Statistics Canada, "Visible minority of person," Statistics Canada, Ottawa, 2015.

[5] Durham Region Health Department, "Durham Region Opioid Information System," The Regional Municipality of Durham, 2023. [Online]. Available: https://www.durham.ca/en/health-and-wellness/opioid-information-system.aspx.

APPENDIX 5.2

Access to Adequate and Safe Housing in Durham Region

Housing supply and demand can impact core housing needs (i.e., a home that is adequate, affordable, and sufficient) and contribute to homelessness if there are insufficient affordable housing options in the community.

Context: Housing Demand and Supply

Strong, vibrant, and sustainable communities rely on a supply of housing that is responsive to the needs of their growing and changing populations.

The current and future housing needs of people in Durham Region are influenced by numerous social and demographic factors.

In 2021, there were an average of 2.87 people per household. [1] This is the first time an increase has been seen since 1976 (**Figure A5.2.1**). Excluding this increase in 2021, the general trend in the Region is that the number of households is growing at a faster rate than the population, meaning the average number of people per household is declining. [2]

Smaller average household sizes means that more housing units are needed to house the same number of people. It also means that more households can be accommodated in smaller units in high-density developments within urban centers and corridors that are well served by transit and other amenities.

The Region currently has an adequate supply of land that has been designated for residential development and growth in residential units is expected to increase to meet the demand of Durham's rising population. [2]

Household Size Trends

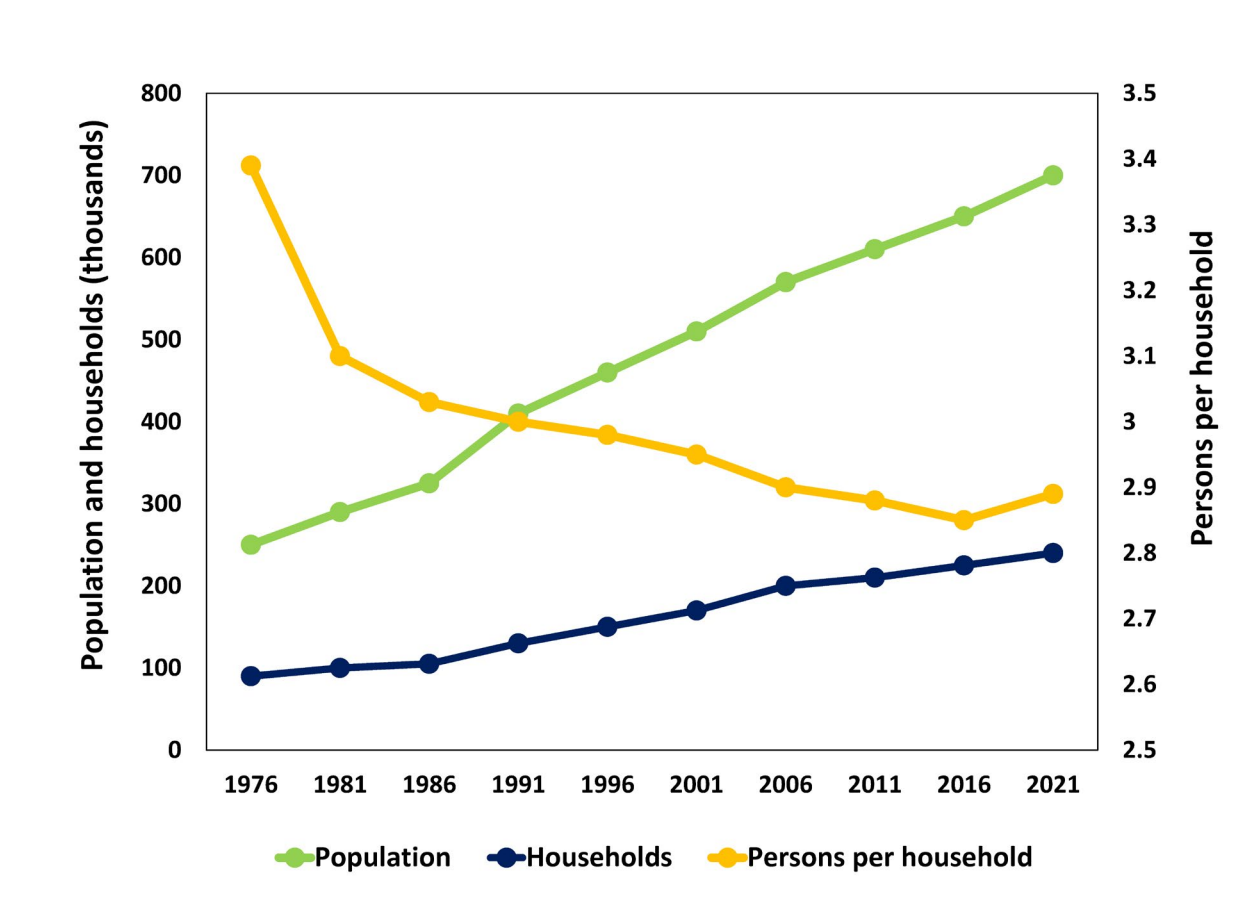


Figure A5.2.1 | Population, households, and people per household in Durham Region, 1976 to 2021.

Figure Adapted from: 2021 Census of Population – Population and dwelling counts release, File: D01-03 (Report #2022-INFO-21), Commissioner of Planning and Economic Development, Regional Municipality of Durham.

Core Housing Need

Households in "core housing[37] need" refers to those where their dwelling is considered unaffordable[38], unsuitable [39], or inadequate[40] and cannot afford alternative housing in their community. [3]

Core Housing Need Rates In Canada

Figure A5.2.2 | Core housing need rates in Canada by geography, 2021.

Figure Adapted from: Core housing need in Canada – Infographic, Statistics Canada. [3] Data source: Statistics Canada, Census of Population, 2021. ISBN: 978-0-660-45408-5 | Catalogue number: 11-627-M.

In Canada, core housing need rates are highest in Canada's primary downtown areas (**Figure A5.2.2**) and renter households are more likely than owner households to be in core housing need. [3] **Table A5.2.1** provides a summary of the three core housing needs indicator thresholds in Durham Region, by municipality.

37 **Core housing need**: Core housing need refers to whether a private household's housing falls below at least one of the indicator thresholds for housing adequacy, affordability, or suitability, and would have to spend 30 per cent or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable (attains all three housing indicator thresholds).

38 **Unaffordable housing**: A household that spends more than 30 per cent of its income on shelter cost.

39 **Unsuitable housing** refers to households that do not have the required number of bedrooms as measured by the National Occupancy Standard, based on the age, sex, and relationships among household members.

40 **Inadequate housing** refers to homes that need major repairs. This includes dwellings with defective plumbing or electrical wiring and those needing structural repairs to walls, floors, or ceilings.

Table A5.2.1 | Core housing needs indicator thresholds for Durham Region households in 2021, by municipality.

MUNICIPALITY	UNAFFORDABLE	UNSUITABLE	INADEQUATE
Pickering	24.1%	5.3%	3.6%
Ajax	24.7%	7.2%	3.3%
Whitby	21.4%	4.4%	3.2%
Oshawa	27.6%	6.1%	6.3%
Clarington	18.6%	3.2%	3.3%
Scugog	16.7%	2.1%	5.4%
Uxbridge	20.2%	1.8%	4.8%
Brock	20.4%	4.1%	7.3%
Durham Region	23.4	5.1%	4.3%

At Home in Durham, 2014 to 2024

At Home in Durham is the Region's current housing plan which aims to improve affordability and access to housing, protect the existing affordable housing supply, encourage housing diversity, and build capacity in the housing system. [4]

The Plan is made up of four key goals:

Since the introduction of this Plan in 2014, there has been a marked shift in the issue of housing affordability across the province, creating a "housing crisis" that has made the need for action even greater than when At Home in Durham was first developed.

Since this Plan was created the Region has participated or completed two key homelessness initiatives: [5]

- The Region partnered with the Canadian Alliance to End Homelessness to participate in its Built for Zero campaign in 2019. The goal of the campaign is to help a core group of leading communities to achieve and sustain functional zero chronic homelessness.
- The Region has fully implemented a By-Name-List, which is a real-time list of people known to be experiencing homelessness, as well as a co-ordinated access system that enables community partners to prioritize and work more effectively with this population.

Within the final five years of the Plan (2019 to 2024), the Region has committed to initiating the development of 1,000 new affordable housing units. As of 2022, projects currently completed or under development represent about 40 per cent of this target. [5]

The new regulatory framework in the Housing Services Act provides an additional opportunity for the Region to be more responsive to local needs and to grow and sustain the community housing portfolio in the future. [4]

Community Safety and Well-Being (CSWB) Plan

In addition to the Region's current housing plan, homelessness and basic needs was identified as a priority risk factor in the CSWB Plan. [6]

Within engagement sessions for the CSWB Plan the following themes related to homelessness were noted: [6]

- Demand for housing outweighing local supply.
- How lack of housing impacts service delivery for individuals requiring multiple services.
- Interconnectedness of homelessness and other community resources.
- Impact of the COVID-19 pandemic on homelessness and poverty, specifically food insecurity and impacts on mental health.

Homelessness Services in Durham Region

The demand for housing is currently exceeding local supply, which is having an impact on the demands for homelessness services in the community.

There are several shelter programs across Durham Region set up to help if people don't have another place to stay (**Table A5.2.2**).

The 2021 PiT Count identified the service needs and barriers to accessing these services for individuals who were experiencing homelessness during the Count period and participated in the survey (n=316 individuals). More affordable housing, increased income from Ontario Works, help with housing applications and transportation, and mental health supports were the top services needs required (**Figure A5.2.3)**. [7] Access to services was a barrier for 45 per cent of the respondents, with the most commonly reported barriers to accessing these much needed services included wait lists, discrimination, quality of services and being worried about one's own safety (**Figure A5.2.3**). [7]

Table A5.2.2 | Shelter programs in Durham Region and the populations they support.

SUPPORTED POPULATIONS	SHELTER PROGRAMS
Victims of violence, assault, abuse	• Denise House • Y's WISH • Herizon House • Bethesda House • DRIVEN • Durham Domestic Violence/Sexual Assault Care Centre • Consolidated Violence Against Women (VAW)
Indigenous Peoples	• Niijkiwendidaa Anishnabekwag Services Circle (NASC)[41]
Individuals who currently are housed but are experiencing financial hardship	• CDCD: Housing Stability Program (HSP)[42]
Youth	• Durham Youth Services: Joanne's House • The Refuge
North Durham	• Brock Community Health Centre • North House • Community Living

Source: Durham Region Housing and Homelessess webpage: durham.ca/en/living-here/housing-shelters-and-homelessness.aspx

41 NASC provides the following program supports: crisis and long-term counselling, Child Witness to violence program, transitional housing support program (THSP), Indigenous youth in transition support worker (IYIT), Indigenous healthy babies and healthy families program (IHBHF).

42 CDCD: HSP – Community Development Council Durham's temporary HSP offers financial assistance for housing costs during the COVID-19 pandemic. Financial assistance includes rent and utility arrears and monthly housing costs for up to three months. More information can be found at cdcd.org

Homelessness Service Needs and Barriers

Homelessness service needs

Service needs	Count of responses	Per centage
More affordable housing	283	90%
Money/more money from Ontario Works	243	77%
Help with housing applications	209	66%
Help with transportation	208	66%
Mental health supports	134	42%
Help finding employment or job training	123	39%
Help with physical disability or serious/ongoing medical conditions	102	32%
Addiction management or withdrawal support	97	31%
Help with overdose prevention	50	16%
Other	14	4%

Barriers to accessing homelessness services

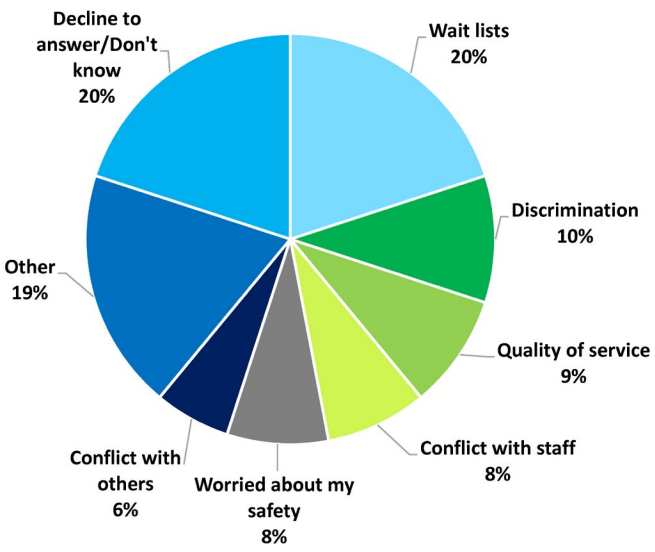


Figure A5.2.3 | Homelessness service needs and barriers to accessing those services in Durham Region, 2021.

The percentage of the support and service needs adds up to greater than 100% as people could select multiple options.

Figure Adapted from: Durham Region Point-In-Time Count Report 2021 – Measuring the Scope and Nature of Homelessness in Durham. [7]

Additional Resources

AT HOME IN DURHAM: FIVE-YEAR REVIEW, 2019 [23]

The Regional Municipality of Durham

2019

At Home in Durham is the Region's current housing plan which aims to improve affordability and access to housing, protect the existing affordable housing supply, encourage housing diversity, and build capacity in the housing system.

BUILDING ON HEALTH IN PRIORITY NEIGHBOURHOODS

Durham Region Health Department (DRHD)

2015

This report identifies seven Priority Neighbourhoods in Durham Region and introduces some of the community assets and health priorities in these Neighbourhoods as part of the preliminary analysis.

DURHAM REGION'S HEALTH NEIGHBOURHOODS

Durham Region Health Department

Last updated: June 2022

durham.ca/neighbourhoods

This is the online landing page for DRHD's Health Neighbourhoods initiative. Durham Region has 50 Health Neighbourhoods and presents 96 indicators by neighbourhood and municipality to tell us about the demographics and health of our communities. From this link it is possible to access the map viewer (an interactive map that views information by Health Neighbourhood), indicator summaries (interactive summaries that show how an indicator ranges across Durham Region using maps and tables) and Neighbourhood profiles (interactive profiles which give information for a particular Neighbourhood or municipality and show how the area compares with Durham Region and Ontario). Reports and FAQs are also available.

MISSISSAUGAS OF SCUGOG ISLAND FIRST NATION WEBSITE

Scugog First Nation

scugogfirstnation.com

This website shares information about the Mississaugas of Scugog Island including origin and history, leadership, news, culture and events, partnerships and contact information.

POINT-IN-TIME COUNT REPORT 2021 – MEASURING THE SCOPE AND NATURE OF HOMELESSNESS IN DURHAM

Community Development Council Durham & The Region of Durham

2021

This report provides a snapshot of the nature of homelessness in Durham Region in 2021 based on the Point-in-Time (PiT) Count. These findings include the total number of people counted as homeless in the Region within a 24-hour period, basic demographics of survey participants, and other indicators of how and why people were experiencing homelessness in Durham Region.

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[1] Statistics Canada, "Census Profile. 2021 Census of population. Statistics Canada Catalogue no. 98-316-X2021001.," Statistics Canada, Ottawa, 2023.

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[4] The Regional Municipality of Durham, "At home in Durham, the Durham housing plan 2014-2024 annual report (Report: #2022-COW-19)," Commissioner of Finance, Commissioner of Social Services and Commissioner of Planning & Economic Development, Whitby, 2022.

[5] The Regional Municipality of Durham, "At home in Durham: Five-year review (2019)," The Regional Municipality of Durham, Whitby, 2019.

[6] The Regional Municipality of Durham, "Community safety and well-being plan," The Regional Municipality of Durham, Whitby, 2021.

[7] S. Arman, "Durham Region point-in-time count report 2021 - Measuring the scope and nature of homelessness in Durham," Community Development Council Durham, The Regional Municipality of Durham, Whitby, 2021.

APPENDIX 5.3

Health Impacts of Experiencing Food Insecurity

Food insecurity is a serious public health issue. The inability to buy nutritious and preferred foods, and the emotional and psychological stress that comes from that, can lead to many serious negative health consequences. [1]

Table A5.3.1 provides a summary of the negative impacts experiencing food insecurity may have on health across the life course.

Table A5.3.1 | Potential negative health impacts across the life course resulting from experiences of food insecurity.

AGE GROUP	NEGATIVE HEALTH IMPACTS
Infants	• During pregnancy, poor birth outcomes such as neural tube defects, low birth weight and anemia, are often related to inadequate maternal nutrition. [44, 45] • Food insecurity contributes to the early cessation of exclusive breastfeeding in Canada. [46] • During infancy, poor nutrition may slow growth and cognitive development and can influence overweight and health in toddlers. [45, 46]
Children and youth	• Children and youth who experience hunger are more likely to suffer from chronic conditions including asthma [46] and depression and find it harder to concentrate and learn in school. [49] • Food insecurity can lead to negative psychosocial outcomes in children, while teenagers are at risk of suffering from depression, social anxiety, and suicide. [50]
Adults	• Adults living in food insecure households have poorer physical and mental health. [44] • Increased rates of many chronic conditions, including, depression and anxiety, type 2 diabetes, heart disease, hypertension, premature mortality. [51, 47, 52] • Increased susceptibility to infectious diseases. [47] • More likely to be diagnosed with multiple chronic conditions. [52] • Maternal food insecurity is positively associated with postpartum mental disorders. [48, 49]
Older adults (65+)	• Among older adults, malnutrition can result in a loss of muscle mass and strength, which can lead to disability and loss of independence. [44]

References

[1] Ontario Dietitians in Public Health, "Ontario Dietitians in Public Health position statement on responses to food insecurity 2020," Ontario Dietitians in Public Health, 2020.

[2] Health Canada, "Prenatal guidelines for health professionals - Folate contributes to a healthy pregnancy," Governent of Canada, Ottawa, 2009.

[3] C. Drennen, S. Colema, S. de Cuba, D. Frank, M. Chilton, J. Cook and e. al., "Food insecurity, health, and development in children under age four years," Pediatrics, vol. 144, no. 4, p. e20190824, 2019.

[4] S. Orr, N. Dachner, L. Frank and V. Tarasuk, "Relation between household food insecurity and breastfeeding in Canada," CMAJ, vol. 190, no. 11, pp. E312-E319, 2018.

[5] Durham Region Health Department (DRHD), "The price of eating well in Durham Region 2022," Durham Region Health Department, Whitby, 2022.

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[7] K. Clemens, B. Le, A. Ouedraogo, C. Mackenzie, M. Vinegar and S. Shariff, "Childhood food insecurity and incident asthma: A population-based cohort study of children in Ontario, Canada," PLoS One , vol. 16, no. 6, p. e0252301, 2021.

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[11] V. Tarasuk, C. Gundersen, X. Wang, D. Roth and M. Urquia, "Maternal food insecurity is positively associated with postpartum mental disorders in Ontario, Canada," Journal of Nutrition, vol. 150, no. 11, pp. 3033-3040, 2020.

[12] C. R. V. Orr, T. Coker, E. Perrin and K. Flower, "Time-varying associations between food insecurity and infant and maternal health outcomes," Journal of Nutrition, vol. 152, no. 5, pp. 1291-1297, 2022.

DURHAM REGION

HEALTH DEPARTMENT

Durham Health Connection Line
1-800-841-2729 or 905-668-2020
durham.ca/health
If you require this information in an accessible format, contact 1-800-841-2729.

June 2024