

# Oral Health Report 2019

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PETERBOROUGH PUBLIC HEALTH



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Peterborough Public Health, *Oral Health in Peterborough*, February, 2019

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## Acknowledgements

The authors wish to extend a message of thanks and appreciation to the Peterborough Public Health Oral Health program staff for their ongoing work and support in collecting the data contained in this report.

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## Introduction

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Peterborough Public Health's (PPH) approach to oral health is holistic in nature. Its goals are to re-orient health services to achieve a balance between disease prevention and treatment, to foster development of healthy public policy, to achieve positive and equitable oral health outcomes and to use innovative approaches to services for those clients who need them the most.

The purpose of this report is to describe the oral health of people living in Peterborough County and City and First Nation communities (referred to in this report as Peterborough residents) and to describe the scope and impact of oral health programs at Peterborough Public Health (PPH). This report should help inform decision-makers on the nature and distribution of oral health challenges and opportunities in the community. The report utilizes several key data sources, accessible to PPH, to complement direct client observation to provide a more robust assessment of local oral health.

Good oral health is essential to overall health and quality of life. Oral pain, missing teeth or oral infections can influence the way a person speaks, eats and socializes. These oral health problems can reduce a person's quality of life by affecting their physical, mental and social well-being.

Research has shown there is an association between oral disease and other health problems such as diabetes, heart disease and stroke, respiratory illness in older adults, as well as pre-term and low-birth-weight babies. Although researchers are just beginning to understand this relationship, evidence shows that oral disease can aggravate other health problems and that keeping a healthy mouth is an important part of leading a healthy life.

Oral diseases are mostly preventable. However, once such conditions develop, they impose significant direct and indirect costs on individuals as well as society. In Canada, an estimated 2.26 million hours of school days and 4.15 million working days are missed each year due to dental related illness (Health Canada, 2010). Additionally tooth decay accounts for one-third of all day surgeries performed on children between the ages of 1 and 5 (CIHI, 2013).

Healthy Smiles Ontario (HSO) is a government-funded provincial program that provides free preventive, routine and emergency dental services for eligible children and youth aged 17 years and under, from low-income households.

Many poverty advocates are calling on the Ontario government to expand the existing public health programs for low-income children (HSO) to include both low-income adults and seniors.

The information contained in this report can be used to:

- identify and explain current local public health dental services,
- identify health inequalities and community needs for oral health,
- plan and secure future service delivery for priority populations, and
- set priorities for local health promotion and disease prevention activities.

## Data Sources

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Multiple data sources were used in this report. For further information about these data sources please contact Peterborough Public Health.

### Section 1: Oral Health Services

*Oral health school screening data* were collected in accordance with the Ontario Public Health Standards (OPHS). The mandatory information was collected and uploaded into the Ministry of Health and Long-Term Care's Oral Health Information Support System (OHISS) in accordance with Personal Health Information Protection Act (PHIPA). In this report, OHISS analysis tools were used to retrieve information on number of children screened, percentage of Children with Urgent Care needs (CUC), percentage children not requiring treatment, and percentage of high-risk schools. These variables were extracted for 2015-16, 2016-17 and 2017-18 school years.

ClearDent™ is a paperless dental office management software system used at the Community Dental Health Clinic, which integrates patient information, digital imaging, electronic charting, treatment plans and recall, management reports and billings, lab tracking and scheduling.

### Section 2: Utilization of Oral Health Services and Oral Health Status

Data regarding the utilization of *oral health services and oral health status*, such as insurance coverage, visiting a dentist, and sociodemographic indicators are derived from the Canadian Community Health Survey (CCHS). The CCHS collects health determinants, health status, and health system utilization data from people aged 12 years or older living in households across Canada.

Measures are presented from the 2003, 2005, 2007/2008, 2009/2010, and 2013/2014 CCHSs for the population served by Peterborough Public Health and the population of Ontario. Due to a change in CCHS survey design, the 2015/16 data is not included in this report (i.e. not comparable to previous cycles).

Estimates from the CCHS are presented with 95% confidence intervals. Estimates where the coefficient of variance is greater than 33.0% are not reported (NR); estimates where the coefficient of variance is between 15.0% and 33.0% should be interpreted with caution and are presented with an asterisk (\*).

**Limitations:** The CCHS has several limitations, notably: sample sizes for Peterborough are small and as a result there is a large degree of variability associated with some of the estimates provided, particularly in groups with low representation such as youth and for variables where responses are rare; for example, the presence of some oral health issues. In addition, people living in First Nations communities are not included in the sample for the CCHS.

### Section 3: Oral Health Impact on the Medical System

*Emergency Department (ED) data* were obtained from the National Ambulatory Care Reporting System (NACRS). Emergency departments in Ontario are required to submit data to NACRS. Data from NACRS are retrieved using IntelliHEALTH, an Ontario Ministry of Health and Long-Term Care data portal.

Variables contained in NACRS include: demographic information about the patient (e.g., age, sex, region of residence); and information about the ED visit admission (e.g., date of visit, unscheduled emergency).

Records from NACRS are classified according to the International Classification of Diseases, 10<sup>th</sup> Revision (ICD-10). Data for this report was retrieved using the ICD-10 main problem code *block K00-14: Diseases of oral cavity, salivary glands, and jaws*. This code block includes the following diagnoses:

- K00: Disorders of tooth development and eruption
- K01: Embedded and impacted teeth
- K02: Dental caries
- K03: Other diseases of hard tissues of teeth
- K04: Diseases of pulp and periapical tissues
- K05: Gingivitis and periodontal diseases
- K06: Other disorders of gingival and edentulous alveolar ridge
- K07: Dentofacial anomalies [including malocclusion]
- K08: Other disorders of teeth and supporting structures
- K09: Cysts of oral region, not elsewhere classified
- K10: Other diseases of jaws
- K11: Diseases of salivary glands
- K12: Stomatitis and related lesions
- K13: Other diseases of lip and oral mucosa
- K14: Diseases of tongue

**Only data from K00 to K08 codes is used in this report**, as there is a direct correlation between these diagnoses and access to oral health care services.

*Population data* are provided by two sources, Statistics Canada and the Ontario Ministry of Finance. Population estimates are final inter-censal (i.e. between census) estimates that are interpolated using the adjusted census counts around the year that the estimates are for. Population data are retrieved using IntelliHEALTH, an Ontario Ministry of Health and Long-Term Care data portal.

*Cancer data* are provided by Cancer Care Ontario (CCO) from the Ontario Cancer Registry. CCO monitors cancer incidence, mortality, survival patterns, and trends over time. The Ontario Cancer Registry includes data on all newly diagnosed cases of cancer in Ontario since 1964 and includes approximately 97% of all cancer cases in Ontario. Records of new cancer diagnoses and deaths in Ontario are based on hospital discharge summaries, pathology reports, records from regional cancer centres, and death records. This data was accessed from Public Health Ontario's Cancer Incidence Snapshot and Cancer Mortality Snapshot.

## Definitions and Notes

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**95% Confidence Interval (95% CI):** a range of values within which 95% of the time the true estimate will lie. Confidence intervals provide an indication of the reliability of the estimate. Estimates are considered statistically significantly different (a difference likely not do to chance) if the 95% confidence intervals of the estimates do not overlap.

**Age-specific Rate:** the total number of events (e.g. new cases of cancer, deaths) that occur in a specified age group for a given year divided by the total population of that age group in that given year. Often these figures are very small and are therefore multiplied by a factor of 100,000 to make them more meaningful.

$$\text{age – specific rate} = \frac{\text{number of ED visits in 2012 in Peterborough residents aged 20 to 24}}{\text{total Peterborough population aged 20 to 24 in 2012}} \times 100,000$$

**Average DMFT/dmft:** the average number of decayed, missing, or filled teeth per child. Lower case letters refer to counts of primary teeth and upper case letters refer to counts of permanent teeth.

**Crude Rate:** the total number of events that occur in a population in a given year divided by the total population in that given year. Often these figures are very small and are therefore multiplied by a factor of 100,000 to make them more meaningful.

$$\text{crude rate} = \frac{\text{number of oral cancer cases in 2007 in Peterborough}}{\text{total Peterborough population in 2007}} \times 100,000$$

**Dental Caries:** the scientific term for tooth decay or cavities.

**Education Categories:** low and high educational attainment categories indicate the self-reported highest level of education acquired by the CCHS respondent and are categorized as follows:

- Low education: less than high school graduation or high school graduation, no post-secondary education.
- High education: some post-secondary education or post-secondary degree/diploma.

**High Intensity School:** a school that had received oral health screening and has more than 14% of their Grade 2 students with an average DMFT/dmft of equal or greater than 2.

**Income Categories:** for this report, the income groupings are based on a derived income variable from the CCHS. This variable provides a distribution of respondents in deciles (ten equal groups) based on the adjusted ratio of their total household income to the low-income cut-off corresponding to their household and community size. It provides, for each respondent, a relative measure of their household income to the household incomes of all other respondents. The income variables used in this report were determined as follows:

- Lower income: the lowest three deciles of the derived income variable from CCHS.
- Middle income: the middle four deciles of the derived income variable from CCHS.
- Higher income: the highest three deciles of the derived income variable from CCHS.



**Peterborough:** refers to the area served by Peterborough Public Health: Peterborough County, the City of Peterborough, Curve Lake and Hiawatha First Nations. Please note that First Nations communities are not included in CCHS data.

**Peterborough Resident:** refers to a person whose place of residence at the time of data collection was within the region served by Peterborough Public Health: Peterborough County, the City of Peterborough, Curve Lake and Hiawatha First Nations. Please note that First Nations communities are not included in CCHS data.

**Standardization:** remove the effects of differences in the age and gender structure of populations among areas and over time. These rates show the number of events per 100,000 population that would have occurred in a given area if the age structure of the population of that area was the same as the age structure of a specified standard population. For this report, where age-standardized rates are given the 2011 Total Canadian Population was used as the standard.

**Urban and Rural Categories:** for this report, the urban/rural groups are based on the pre-defined variable in the CCHS. The urban/rural variable identifies whether the respondent lives in an urban or rural area. Urban areas are those continuously built-up areas having a population concentration of 1,000 or more and a population density of 400 or more per square kilometre based on current census population counts. This variable is grouped into two categories based on the composition of the blocks within the dissemination areas.

**Urgent Dental Needs:** refer to conditions such as pain, infection, hemorrhage, trauma, and large open caries in permanent teeth or in crucial primary teeth, pathology requiring further investigation, or non-reversible periodontal disease.

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# Section 1: Oral Health Services Offered by Public Health

## 1.1 School Screening

All Boards of Health in the province are mandated under the Ontario Public Health Standards to provide oral health screening in elementary schools. The student data are recorded in the provincial Oral Health Information Support System (OHISS) database. These data are analyzed at a provincial level, to assist in the planning and development of community dental programs.



The screening team offers oral health screening in 47 schools in Peterborough – including Curve Lake First Nation, public, separate, private and three intermediate schools. School screenings, completed by a Registered Dental Hygienist and a Certified Dental Assistant, are scheduled throughout the school year and parents/guardians are notified of the screening by a letter. Parents/guardians may contact oral health staff if they wish to exclude their child from screening. Following the visual assessment, the findings are entered into the OHISS application on a secure laptop, and a screening report card is sent home with each child. Notification letters, advising on the need for treatment, are issued to parents/guardians for children with urgent dental needs.

Through screening, children with urgent dental needs are identified, as well as children who need care and are not yet in crisis, and other students who require preventive services such as cleaning, fluoride treatments, and pit and fissure sealants.

Screening intensity level of a school is determined by the proportion of students in Grade 2 with two or more decayed teeth (from the previous school year). The proportion of Grade 2 students with two or more decayed teeth, corresponding intensity level, and the grades screened for a given intensity and the number of schools screened in each level by school year are presented in Table 1.

**Table 1:** School screening intensity level, decayed teeth, grades and number of schools screened by public health

Intensity Level	Proportion with 2 or more Decayed Teeth	Grades Screened	Number of Schools		
			2015-16	2016-17	2017-18
High	14% or more	JK, SK, 2, 4, 6, 8	6	4	8
Medium	9.5-13.9%	JK, SK, 2, 8	6	4	8
Low	<9.5%	JK, SK, 2	32	36	29

In the 2017-2018 school year, the proportion of children with no care required was highest among Junior Kindergarten students at 51.7%. This was also true in the 2015-2016 and 2016-2017 school year at 56.1% and 49.5%, respectively (Table 2).

**Table 2:** School screening data, 2015-2018

School Year	Number of children screened			Percent of children with no care required			Percent of children with urgent dental needs		
	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18	2015-16	2016-17	2017-18
Junior Kindergarten	1119	1155	1194	56.1%	49.5%	51.7%	7.5%	7.9%	5.7%
Senior Kindergarten	1200	1209	1198	45.8%	42.2%	44.5%	10.1%	8.4%	9.0%
Grade 2	1137	1165	1227	35.7%	25.2%	28.2%	7.6%	9.7%	9.9%
Grade 4	111	109	173	55.8%	33.9%	20.2%	12.6%	17.4%	6.9%
Grade 6	97	85	181	54.7%	43.5%	24.3%	10.3%	4.7%	6.0%
Grade 8	146	117	263	67.8%	42.7%	32.3%	2.7%	5.9%	3.8%
<b>Total</b>	<b>3810</b>	<b>3840</b>	<b>4236</b>	<b>52.6%</b>	<b>39.5%</b>	<b>33.5%</b>	<b>8.4%</b>	<b>8.9%</b>	<b>6.8%</b>

As defined under the Healthy Smiles Ontario program, urgent dental needs refer to conditions such as pain, infection, hemorrhage, trauma, large open caries in permanent teeth or in crucial primary teeth, pathology requiring further investigation, or non-reversible periodontal disease. As shown in Table 2, the overall proportion of children with urgent dental needs was 8.4% in the 2015-2016 school year, 8.9% in the 2016-2017 school year and 6.8% in the 2017-2018 school year. For both the 2015-2016 and 2016-2017 school year, Grade 4 students had the highest proportion of children with urgent dental needs, whereas in the 2017-2018 school year it was Grade 2.

From the 2015-2016 school year to the 2017-2018 school year, the proportion of high intensity schools ranged between 9.1 and 17.7% of schools screened (Figure 1).

## 1.2 Dental Treatment Assistance Fund

The Dental Treatment Assistance Fund (DTAF) originally commenced in 2007 by the former Oral Health Coalition of Peterborough to meet the emergency needs of uninsured adults and seniors in our community.

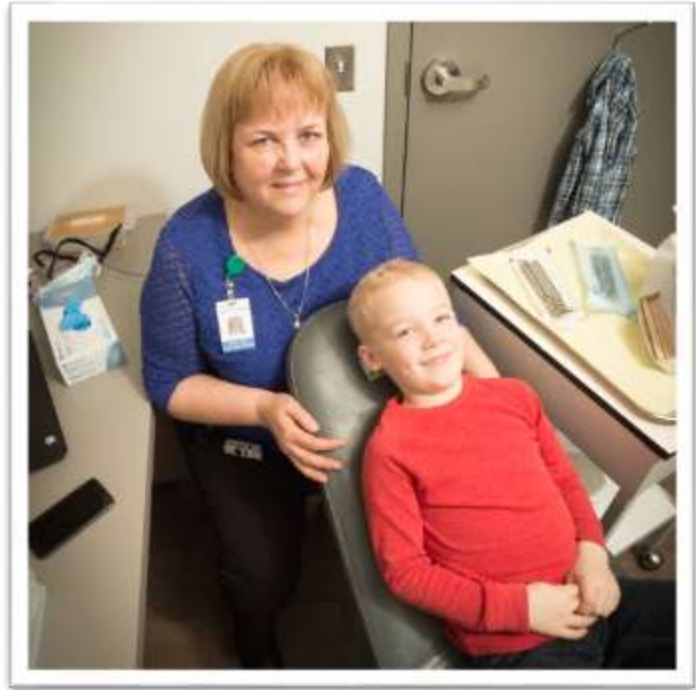
PPH provides the administrative support; at no cost to the fund. DTAF is funded by donations, and provides a maximum of \$150 annually to individuals, 18 and older, who do not have access to any form

of dental insurance and who require but are unable to afford, emergency dental assessment and/or treatment. Clients are referred from partner organizations and by the clients themselves.

DTAF assisted 702 individuals from 2015 to 2018 between 18 and 82 years of age. The average cost of emergency treatment from the fund was \$127 per person.

### 1.3 Community Dental Health Clinic

The Community Dental Health Clinic (CDHC), recently moved from its location in Peterborough Square to PPH's main office at 185 King Street in October 2018. The clinic provides high quality, accessible and comprehensive preventive, routine and emergency dental services for eligible individuals and families. Services are offered by a team of oral health professionals including Dentists, Registered Dental Hygienists, Certified Dental Assistants and Administrative Assistants.



Between January 1, 2016 and December 31, 2017 there were 6193 completed appointments for 1401 unique clients.

Coverage for these dental health services are paid for by publically funded programs.

### 1.4 Community Water Fluoridation (CWF)

Since the 1940's fluoride has been added to public drinking water supplies around the world in order to prevent dental caries and promote good oral health. The fluoridation of drinking water is a well-accepted public health measure which protects all members of a community regardless of age, sex, income, ethnicity, education, access to oral health services, or the ability to afford oral hygiene supplies.



CWF is endorsed by Health Canada and has been proven to be a safe, effective and equitable way to prevent and reduce tooth decay (including root decay) for people of all ages - from children to seniors.

Fluoride works by making the outer layer of teeth stronger and less likely to get cavities.

Currently, CWF is practised in more than 30 countries around the world, providing more than 370 million people with optimally fluoridated water (Ontario Dental Association, 2016).

Reputable scientific studies conducted throughout the past 70 years have consistently shown that fluoridation of community water supplies is a safe and effective way to prevent dental decay in both children and adults.

In Ontario, fluoride additives must meet rigorous standards of quality and purity before they can be used. The City of Peterborough began fluoridation of municipal drinking water in 1973. The level of fluoride in Peterborough's drinking water is measured each day to ensure the optimal concentration range is maintained and reports are provided to Peterborough Public Health.

### Key Points

- On average 8.1% of children screened in schools were identified with an urgent dental need
- DTAF is the only local fund dedicated to providing funds for emergency dental treatment to people who have no access to dental insurance
- PPH continues to support and promote CWF for the benefit of all resident in the city of Peterborough



## Section 2: Utilization of Oral Health Services and Oral Health Status

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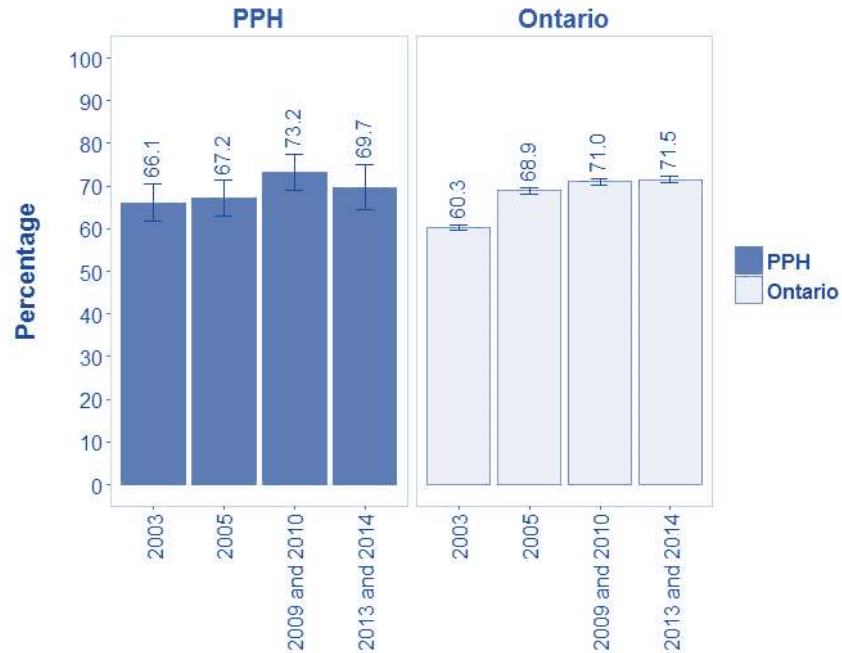
As oral diseases are largely preventable, appropriate access and regular utilization of dental services are crucial in achieving optimum oral health. Large-scale studies have shown that regular dental visits can result in fewer decayed teeth and better oral health. Better access to preventive dental care may also result in cost-savings in future dental treatments.

Those who do not make regular visits to a dental professional demonstrate poor oral health. For instance, while not causal, the results of the Canadian Health Measure Survey 2007-09 (CHMS) illustrate that those who did not visit a dental professional in the last year were almost two times more likely to self-report their oral health as fair or poor compared to those who made dental visits in the last 12 months.<sup>1</sup> These people also had significantly higher numbers of untreated decayed teeth at all ages. Canadian adults who did not visit a dentist in the past year were more also likely to show worse gingival and periodontal measure scores, report more soft tissue oral lesions and have more treatment needs.

### 2.1 Utilization of Oral Health Services

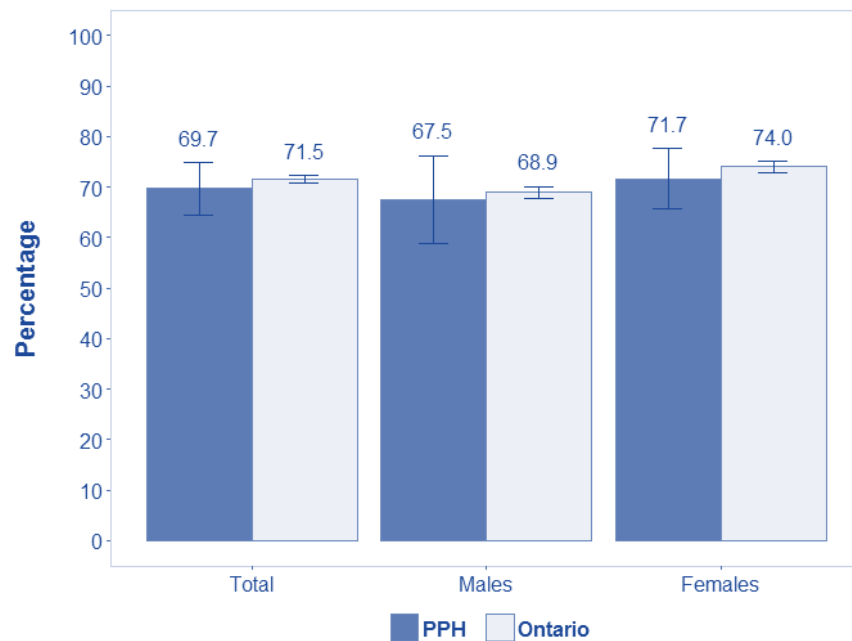
In 2013/2014, 69.7% of Peterborough residents (PPH) and 71.5% of Ontario residents had visited the dentist in the past 12 months (Figure 1).



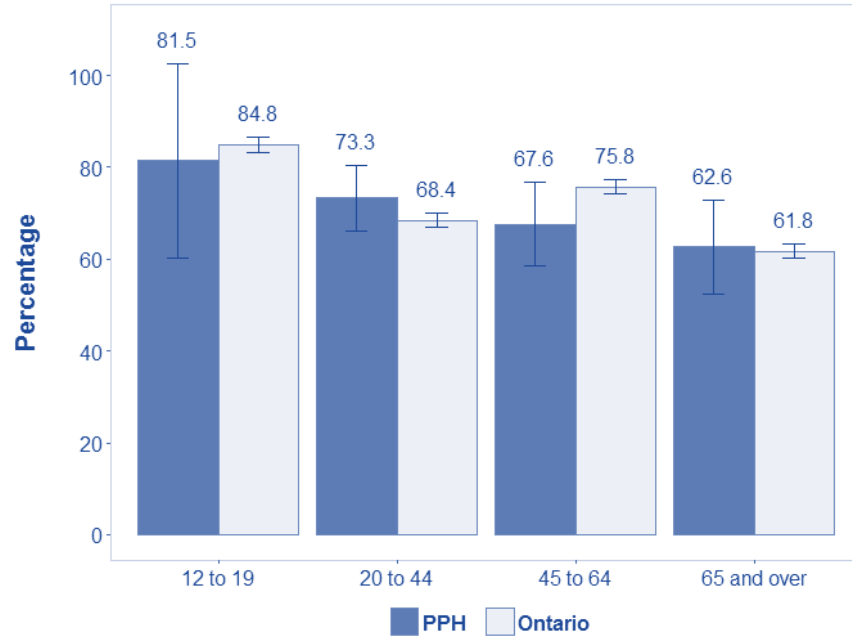


**Figure 1:** The proportion of Peterborough (PPH) and Ontario residents who have visited the dentist in the past 12 months

In 2013/14, a similar proportion of males and females in PPH had visited a dentist in the past 12 months (Figure 2).



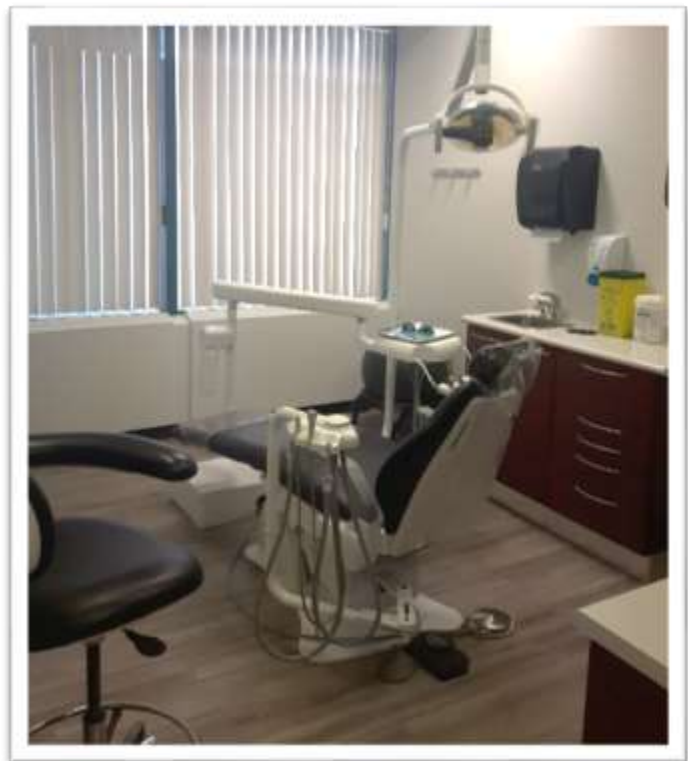
**Figure 2:** Proportion of Peterborough and Ontario residents who **have** visited the dentist in the past 12 months by gender; 2013/14

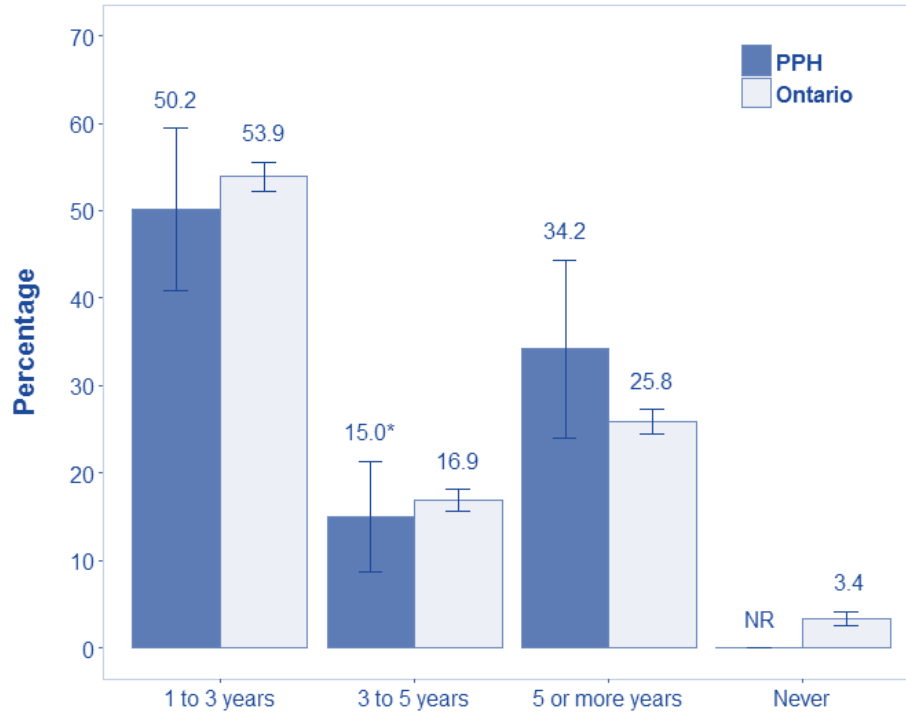


**Figure 3:** Proportion of Peterborough and Ontario residents who **have** visited the dentist in the past 12 months by age group; 2013/14

In PPH, there were no significant differences in the proportion of people who had visited a dentist in the past 12 months by age group, however the proportion was highest for youth aged 12-19 (81.5%) and lowest for adults aged 65 and older (62.6%) (Figure 3). There were significant differences in the proportion of people who had visited a dentist by age group in Ontario. For 2013/14, a significantly greater proportion of youth aged 12 to 19 had seen a dentist in the past 12 months compared to any other age group at 84.8%. 75.8% of adults aged 45-64 and 68.4% of adults aged 20 to 44 had seen a dentist in the past 12 months. Only 61.8% of adults aged 65 or older had been to a dentist in the past 12 months, a significantly lower proportion compared to all other age groups.

Among PPH residents who had not visited a dentist in the last year, half (50.2%) had visited a dentist in the previous 1 to less than 3 years and 34.2% had not visited a dentist in 5 or more years. In Ontario in 2013/14, 3.4% of Ontario residents had never been to a dentist (Figure 4).



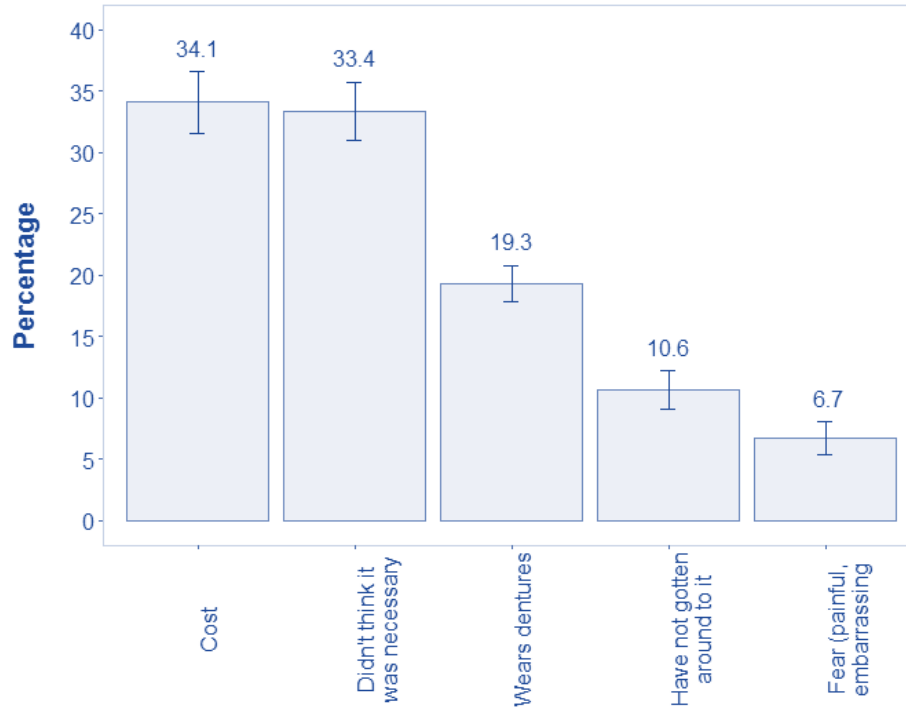


**Figure 4:** Number of years since respondents had last visited a dentist; PPH and Ontario, 2013/14. For the population that had not visited a dentist in the previous 12 months.

\*Use with caution due to high sampling variability of estimates

**NR** – not released, data does not meet Statistics Canada’s quality standards, conclusions based on these data will be unreliable and most likely invalid

Among Ontario residents who had not visited a dentist in the past three years, cost was the most common reason for not visiting a dentist (34.1%), closely followed by not thinking it was necessary (33.4%) (Figure 5). A significantly greater proportion of Ontario residents provided cost as the reason for not visiting a dentist in 2013/14 (34.1%; 95% CI 31.6-36.6%) compared to the proportion of residents who provided cost as the reason in 2009/10 (29.0%; 95% CI 26.8-31.2%). The PPH data on reasons for not visiting the dentist are unstable due to a small sample size and therefore are not reported.

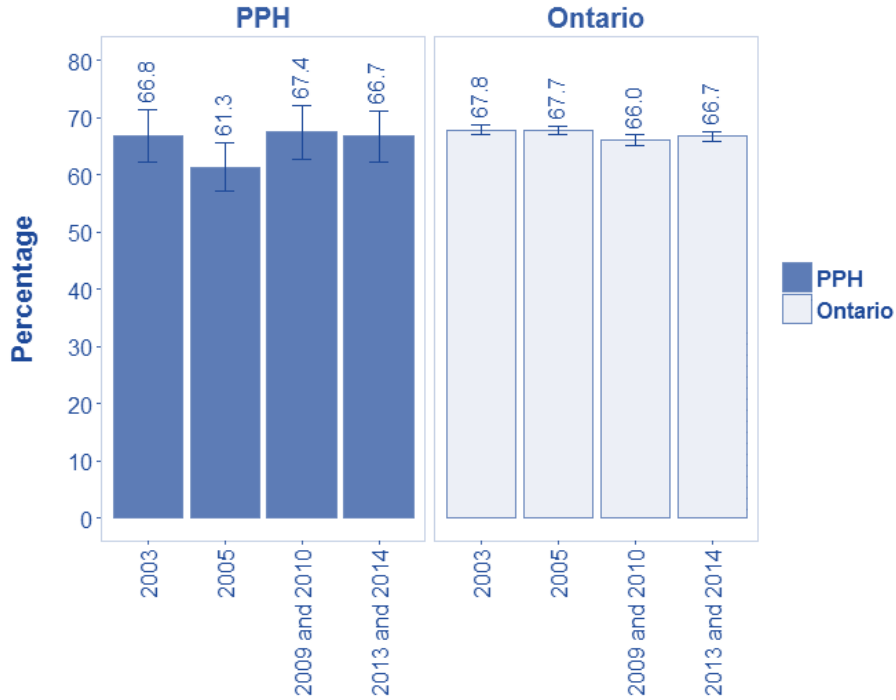


**Figure 5:** The five most common reasons why respondents **have not** been to the dentist in the previous three years; Ontario, 2013/14

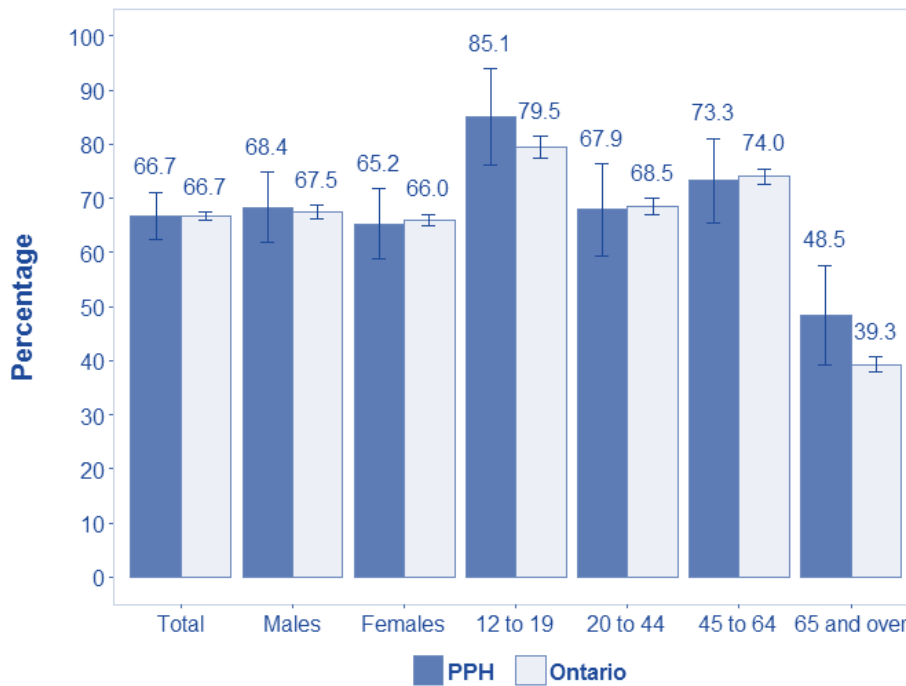
### 2.1.2 Insurance for Dental Services

Having insurance for dental care is an important factor that can influence whether or not an individual goes to a dentist. In 2013/2014, 66.7% of Peterborough residents and 66.7% of Ontarians reported having insurance for dental expenses (Figure 6). There has been no significant change in the proportion of Peterborough residents who have dental insurance since 2003, and the proportion insured are similar to the Ontario rates.

Males and females reported similar dental insurance coverage rates in 2013/2014. However, dental insurance coverage varied by age group for both Peterborough and Ontario. In Peterborough, dental insurance was significantly lower among older adults (aged 65 years or older) compared to all other age groups at 48.5% (Figure 7).



**Figure 6:** The proportion of Peterborough and Ontario residents **who have** dental insurance



**Figure 7:** The proportion of Peterborough and Ontario residents **who have** dental insurance by gender and age group; 2013/14

The majority of people who had insurance for dental care reported having an employer sponsored plan, 77.2% in Peterborough and 84.3% in Ontario, indicating employment as an important factor to having

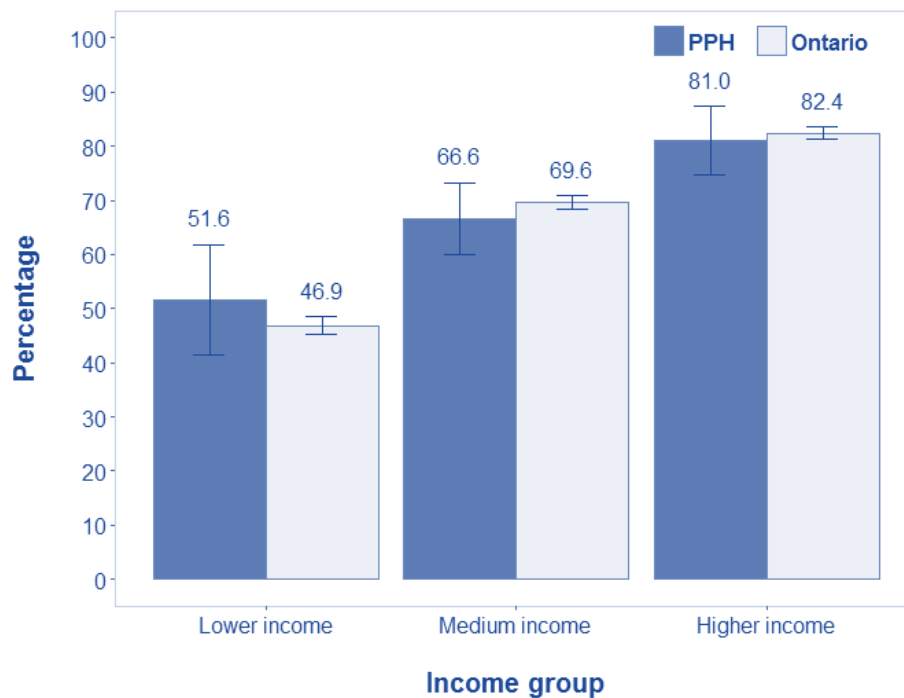
insurance for dental services (Table 3). A significantly greater proportion of Peterborough residents have government sponsored dental insurance compared to Ontario residents (16.7% vs. 9.3%) however, the Peterborough rate should be interpreted with caution due to large sampling variability.

**Table 3:** Type of dental insurance plan, Peterborough and Ontario; 2013/2014

Type of Dental Insurance Plan	Peterborough % (95% CI)	Ontario % (95% CI)
Employer sponsored	77.2 (70.4-83.9)	84.3 (83.5-85.1)
Government sponsored	16.7* (10.8-22.6)	9.3 (8.7-10.0)
Private plan	7.3* (4.1-10.5)	7.4 (6.8-7.9)

\* Estimates should be interpreted with caution due to large sampling variability

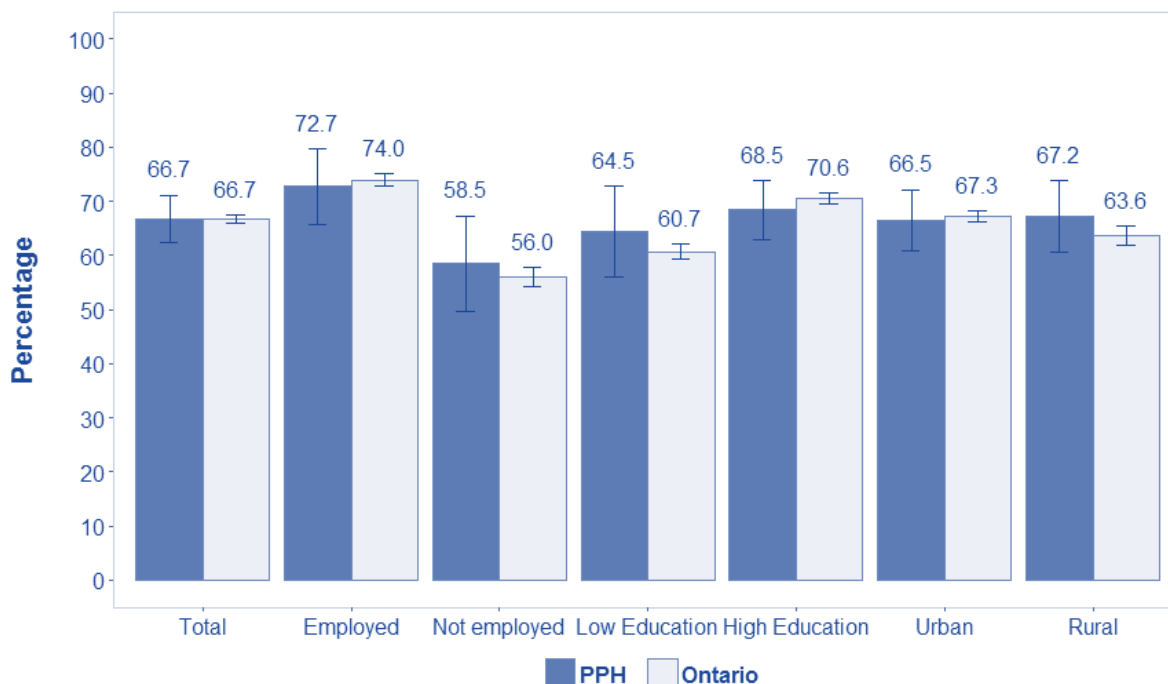
Sociodemographic indicators such as income, education, and geography can influence whether or not an individual has insurance for dental services. In Peterborough, 81.0% of people with higher incomes reported having dental insurance compared to 51.6% of those with lower incomes, a statistically significant difference (Figure 8).



**Figure 8:** The proportion of Peterborough and Ontario residents who have dental insurance by income; 2013/14

Dental insurance coverage also differed by employment status, a smaller proportion of unemployed Peterborough residents reported having insurance compared to those who were employed (58.5% and 72.7% respectively). In Ontario there was a statistically significant difference in dental insurance coverage between people with low and high levels of education. However, in Peterborough the

proportion of dental insurance coverage was more similar by education level at 64.5% for low education and 68.5% for high education in 2013/14. There was little difference observed between urban and rural populations. In Ontario, there were statistically significant differences in dental insurance coverage for income groups, employment status, education level, and urban or rural locations (Figure 9).



**Figure9:** The proportion of Peterborough and Ontario residents who have dental insurance by employment, education, and geography; 2013/14

### 2.1.3 Accessing Dental Care Services

There are a number of factors that can play a role in an individual’s ability to access dental care services including insurance, income, and other sociodemographic factors.

**Table 4:** The self-reported frequency of dental visits for Peterborough and Ontario residents; 2013/2014

Frequency of Dental Visits	Peterborough % (95% CI)	Ontario % (95% CI)
More than once a year	38.3% (32.4 – 44.3)	43.8% (42.9 – 44.7)
About once a year	34.5% (29.0 – 39.9)	30.7% (29.8 – 31.6)
Less than once a year	4.6%* (2.5 – 6.7)	6.2% (5.7 – 6.6)
Only for emergency care	22.6% (18.6 – 26.6)	19.3% (18.5 – 20.1)

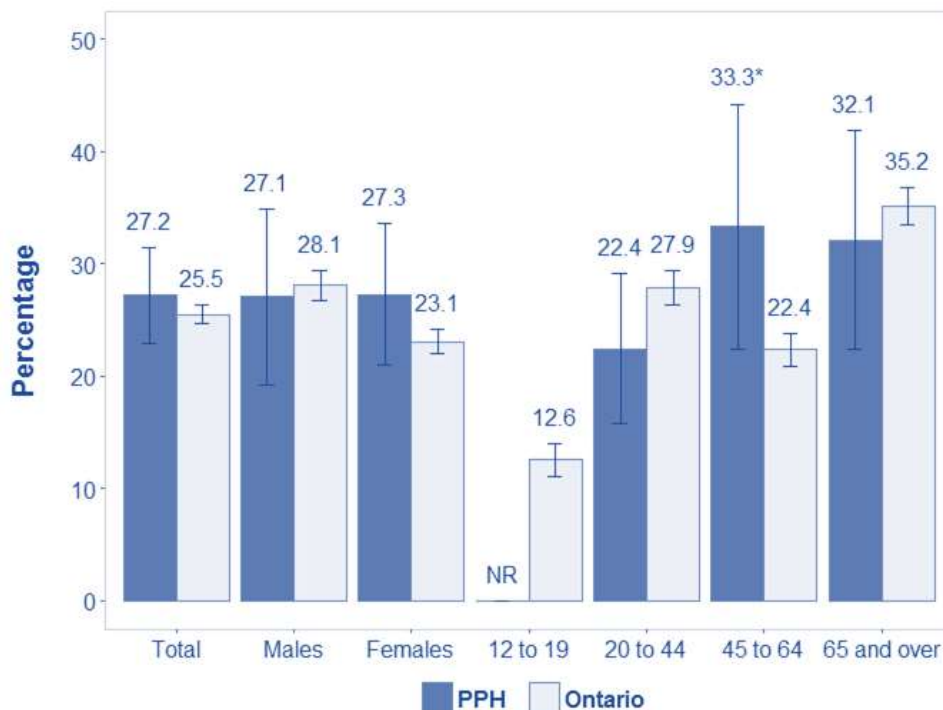
\* Estimates should be interpreted with caution due to large sampling variability

In 2013/2014, the majority of Peterborough and Ontario residents reported usually visiting a dentist about once a year, or more frequently; 72.8% in Peterborough and 74.5% in Ontario. By comparison,



just over one in five Peterborough residents (22.6%) reported usually visiting a dentist only for emergency care, similar to the 19.3% in Ontario (Table 4).

In 2013/2014, around 1 in 4 Peterborough and Ontario residents reported usually visiting the dentist less than once a year (Figure 10). In Peterborough, there were no differences by gender; however, in Ontario a greater proportion of males only visited the dentist less than once a year compared to females. The proportion of people visiting the dentist less than once a year also varies by age group. While these measures are unreliable for the Peterborough population, clear differences by age group can be seen for Ontario residents. In Ontario, over one third of adults aged 65 and over visited the dentist less than once a year, this is significantly higher than all other age groups. Younger adults aged 20-44 had the next greatest proportion at 27.9%, while middle aged adults and youths were less likely to visit the dentist less than once a year at 22.4% and 12.6% respectively.

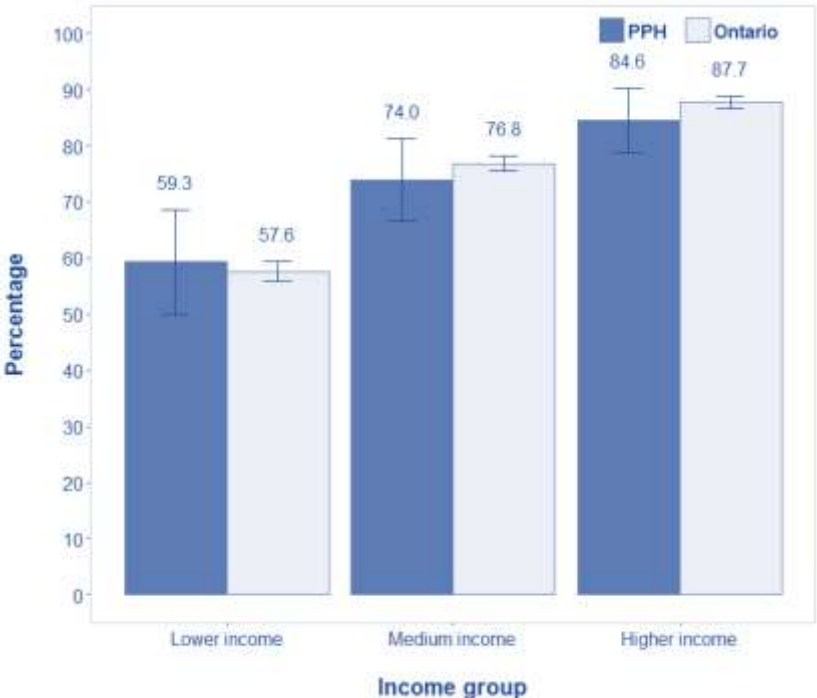


**Figure 10:** The proportion of Peterborough residents who visit the dentist less than once a year by gender and age group; 2013/2014

\*Use with caution due to high sampling variability of estimates

**NR** – not released, data does not meet Statistics Canada’s quality standards, conclusions based on these data will be unreliable and most likely invalid

A statistically significant smaller proportion of Peterborough residents with lower income reported visiting a dentist once a year or more frequently compared to individuals in the higher income category (59.3% vs 84.6%) (Figure 11).



**Figure 11:** The proportion of Peterborough and Ontario residents who visit the dentist at least once a year by income level; 2013/14

**Key Points**

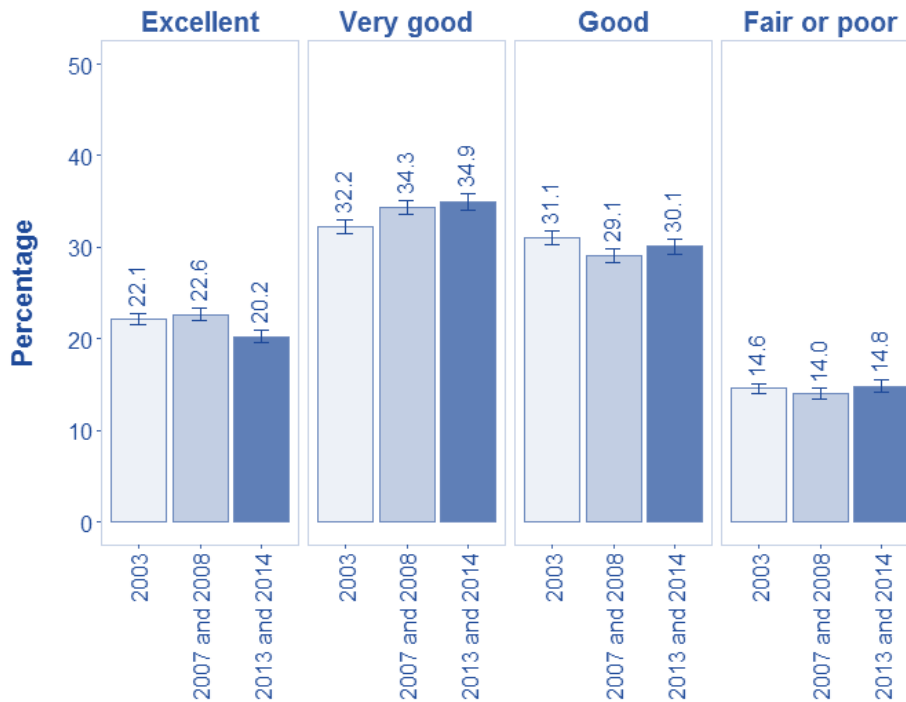
- In 2013/2014, 70% of Peterborough residents had visited the dentist in the past 12 months
- In Ontario, the most common reason for not visiting a dentist in the past three years was cost
- Only 48% of older adults in Peterborough aged 65 years and older had dental insurance in 2013/14
- In Peterborough significantly less people living in lower income have dental insurance compared to people in higher income

**2.2 Oral Health Status**

Some conditions of the mouth can provide an indication of poor oral health. For example, toothaches may indicate dental caries and bleeding gums may suggest gum disease. The majority of Peterborough residents perceive themselves as having excellent, very good, or good oral health. Only 14.8% of respondents reported having fair or poor health of teeth and mouth in 2013/2014. The self-perceived oral health of Peterborough residents reflects the self-perceived oral health across Ontario.



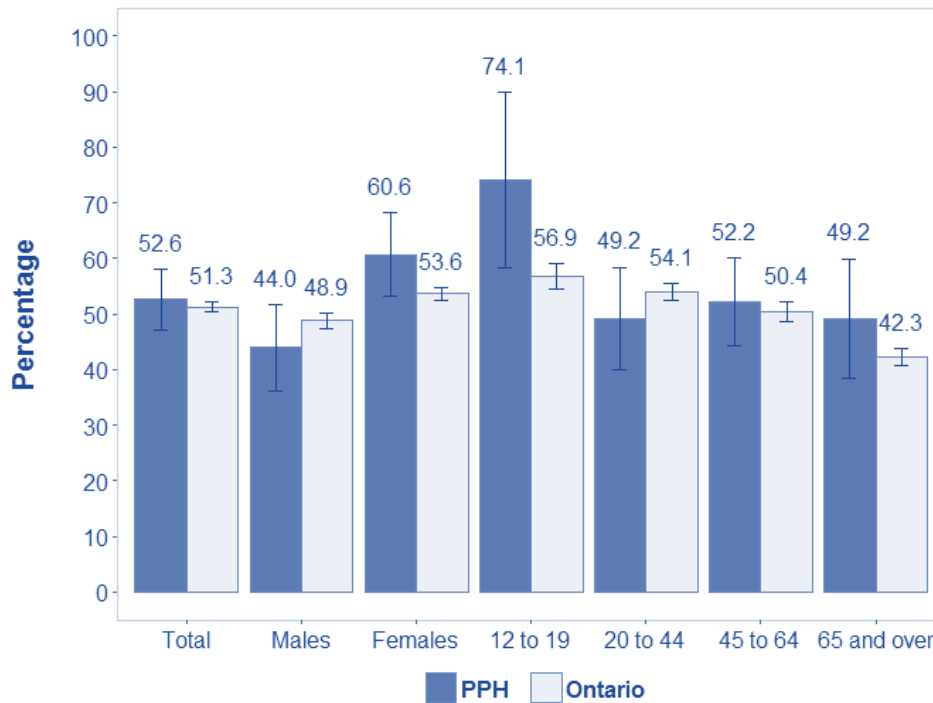
**Figure 12:** Self-perceived health of teeth and mouth of Peterborough residents



**Figure 13:** Self-perceived health of teeth and mouth of Ontario residents

When asked about the health of their teeth and mouth in the past month, just over half of Peterborough residents had experienced oral/facial pain or discomfort (52.6%). Females were significantly more likely

than males to have experienced oral or facial pain or discomfort in Peterborough (60.6% vs 44.0%) and in Ontario (53.6% vs 48.9%) (Figure 14).



**Figure 14:** The proportion of Peterborough and Ontario residents who reported experiencing oral or facial pain or discomfort in the past month; 2013/14

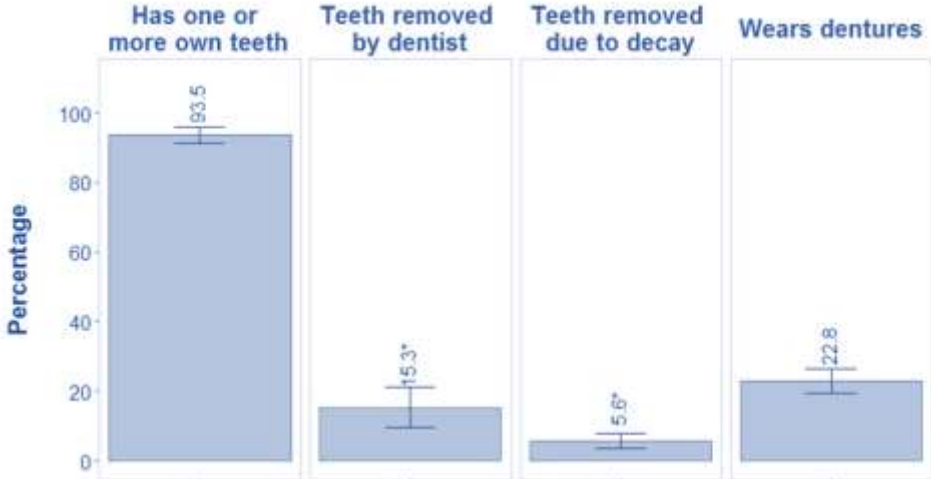
Oral or facial pain or discomfort includes sensitivity to heat/cold, bleeding gums, bad breath, dry mouth, toothache, pain in jaw, and other pain of the face or mouth. As seen in Table 5, below, sensitivity to heat or cold was the most common condition reported; 33.3% in Peterborough and 30.7% in Ontario.

**Table 5:** Proportion of people reported oral or facial pain or other conditions in the past 12 months, Peterborough and Ontario; 2013/14

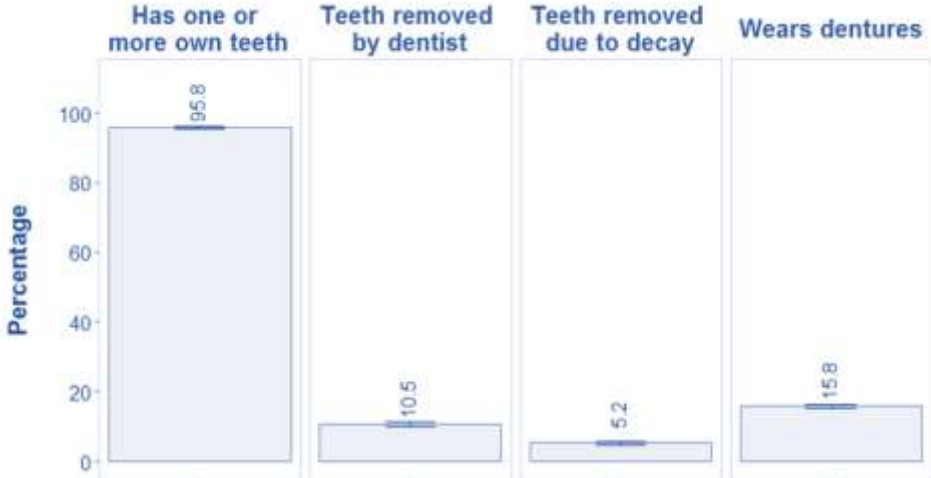
Conditions	Peterborough % (95% CI)	Ontario % (95% CI)
Sensitivity to hot/cold	33.3 (27.6 – 39.0)	30.7 (29.8 – 31.7)
Bleeding gums	9.3 (6.6 – 12.0)	13.9 (13.2 – 14.6)
Bad breath	17.5 (13.0 – 22.1)	14.5 (13.9 – 15.2)
Dry mouth	14.0 (11.0 – 17.1)	14.0 (13.3 – 14.6)
Toothache	11.6 (8.2 – 15.0)	11.9 (11.3 – 12.5)
Pain in jaw joint	11.1 (7.9 – 14.3)	9.8 (9.2 – 10.3)
Other pain of face/mouth	8.1* (4.8 – 11.4)	7.1 (6.6 – 7.6)

\* Estimates should be interpreted with caution due to large sampling variability

In Peterborough, 93.5% of people had one or more of their own teeth in 2013/2014 and 22.8% of people reported wearing dentures; this is significantly greater than the overall proportion of Ontarians who wear dentures (15.8%). In addition, in Peterborough 15.3% of people had a tooth removed by a dentist in the past 12 months and 5.6% of people had a tooth removed due to decay or gum disease; just over one third of all teeth removals. However, both of these estimates have large sampling variability and should be interpreted with caution.

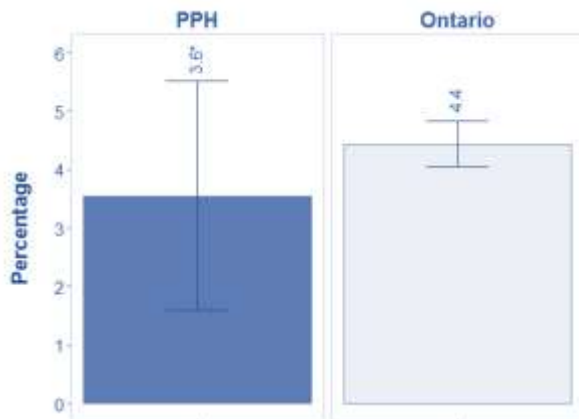


**Figure 15:** Proportion of Peterborough residents who have one or more of their own teeth, have had teeth removed by a dentist in the last 12 months, have had teeth removed by a dentist in the last 12 months due to decay or gum disease, and who wear dentures; 2013/2014

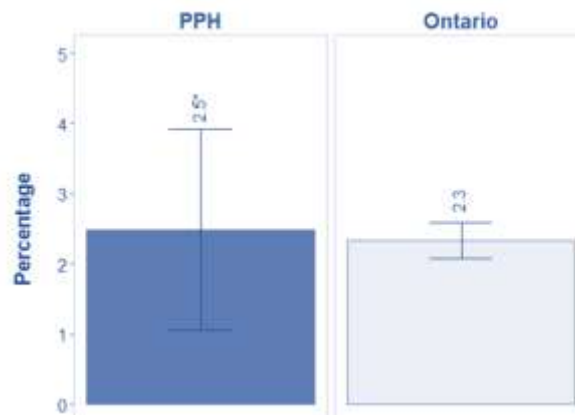


**Figure 16:** Proportion of Ontario residents who have one or more of their own teeth, have had teeth removed by a dentist in the last 12 months, have had teeth removed by a dentist due to decay or gum disease, and who wear dentures; 2013/2014

In addition to the physical burden placed on an individual due to oral health issues, one’s oral health status can also impact social functioning by avoiding conversation or contact with others, or by avoiding laughing or smiling. In Peterborough 3.6%, and in Ontario 4.4%, of residents experienced social limitation due to oral conditions.

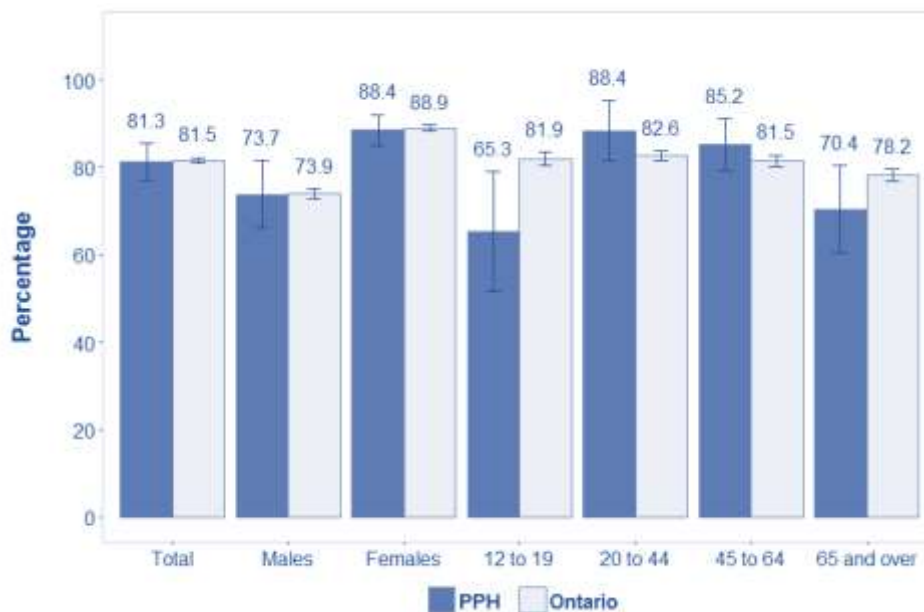


**Figure 17:** Proportion of Peterborough and Ontario residents who experienced social limitations due to their oral health status; 2013/2014



**Figure 18:** Proportion of Peterborough and Ontario residents who had difficulty speaking clearly because of the condition of their teeth or mouth; 2013/2014

Brushing our teeth twice a day has been shown to protect against dental caries and gum disease.<sup>2,3</sup> Four out of five (81.3%) Peterborough residents brushed their teeth twice or more per day in 2013/2014. A significantly greater proportion of females reported brushing their teeth twice or more per day than males (88.4% and 73.7%, respectively). Similar patterns for tooth brushing were found in Ontario. In Peterborough, frequent teeth brushing was lowest for youth aged 12-19 at 65.3%. This is statistically significantly lower than the proportion of 12 to 19 year-olds in Ontario who brushed their teeth at least twice a day (81.9%). Fewer adults over age 65 in Peterborough were also brushing their teeth at least twice a day. One of the reasons older adults in Peterborough may brush their teeth less frequently could be due to the fact that a smaller proportion report having one or more of their own teeth compared to the general population and over half (57.4%) report wearing dentures.



**Figure 19:** The proportion of Peterborough and Ontario residents who brushed their teeth twice or more per day by gender and by age group; 2013/2014

## Key Points

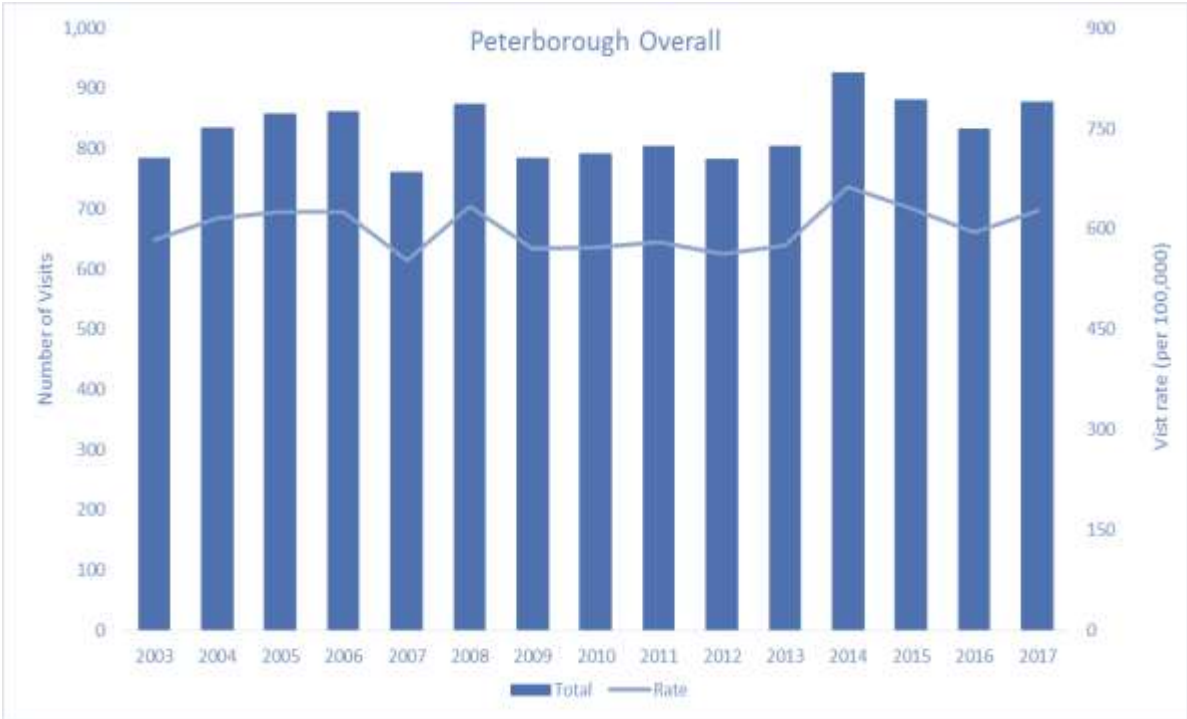
- Over half (52.6%) of Peterborough residents reported experiencing oral and/or facial pain or discomfort in the last month
- 3.6% of Peterborough residents experienced social limitations due to oral conditions
- Four in five Peterborough residents brush their teeth twice or more per day
- Only 65.3% of Peterborough youth aged 12 to 19 reported brushing their teeth at least twice a day

# Section 3: Impact of Oral Health on the Medical System

In the event of an oral health emergency, if access or costs are barriers to regular dental services, it is likely that people will seek care at the emergency department (ED). This section provides a summary of data available on ED visits due to diseases of the oral cavity, salivary glands, and jaw for codes K00-K08 (DOC) which include caries, impacted teeth, and periodontal disease.

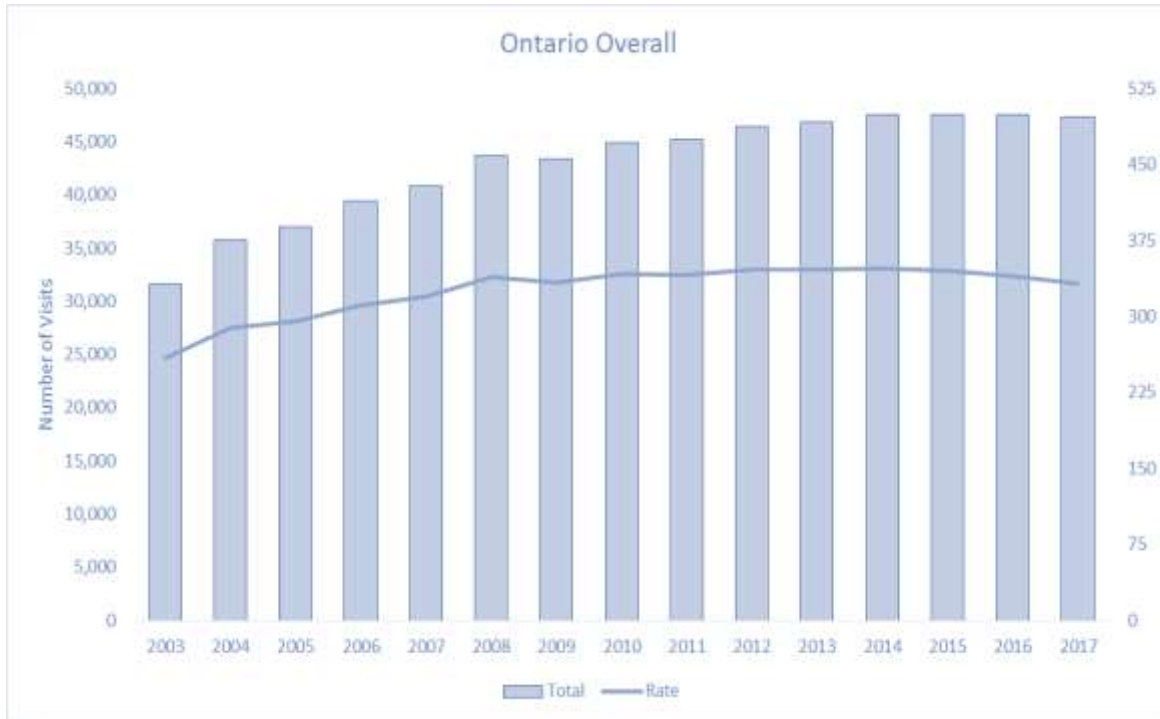
## 3.1 Emergency Department Visits

Between 2003 and 2017, there were 12,449 ED visits due to DOC among Peterborough residents with an average of 830 visits per year. The rate of ED visits due to DOC was generally stable between 2003 and 2017, ranging from a low of 760 visits per 100,000 people in 2007 to a high of 925 visits per 100,000 people in 2014 (Figure 20). By comparison, the number of ED visits due to DOC have increased steadily in Ontario since 2003 with a high of 475 visits per 100,000 people in 2015 (Figure 21). Even with the increasing rates in Ontario, the rates of ED visits in Peterborough are well above the provincial rates for all years from 2003 to 2017.



**Figure 20:** The number of DOC ED visits per year and the rate of DOC ED visits per 100,000 population per year for Peterborough; 2003-2017

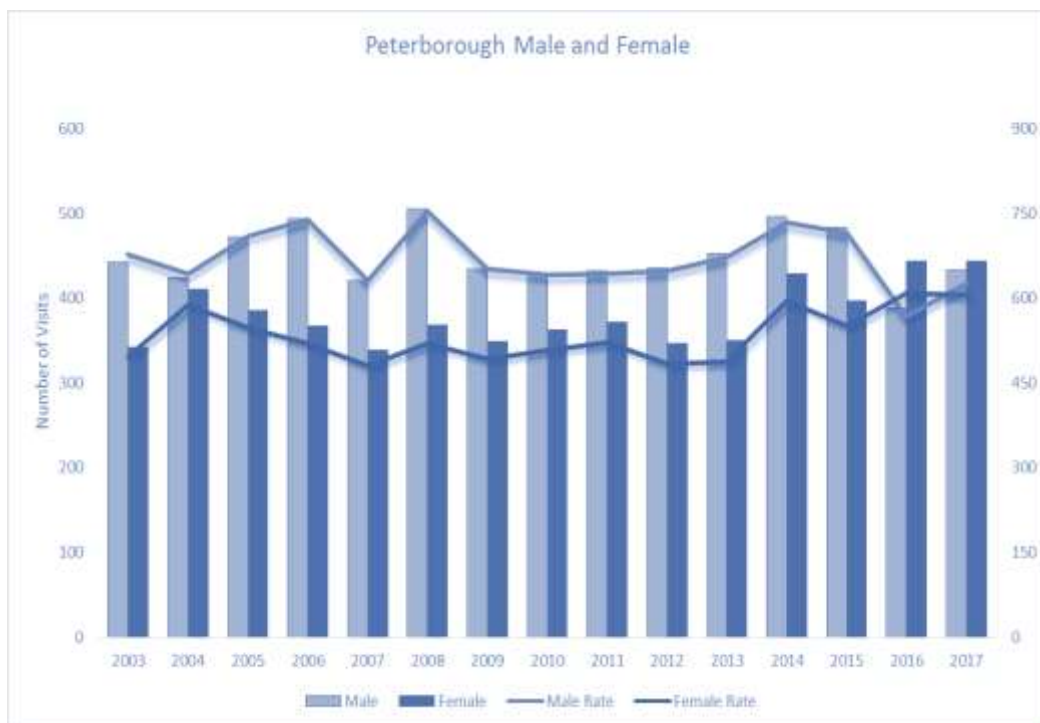




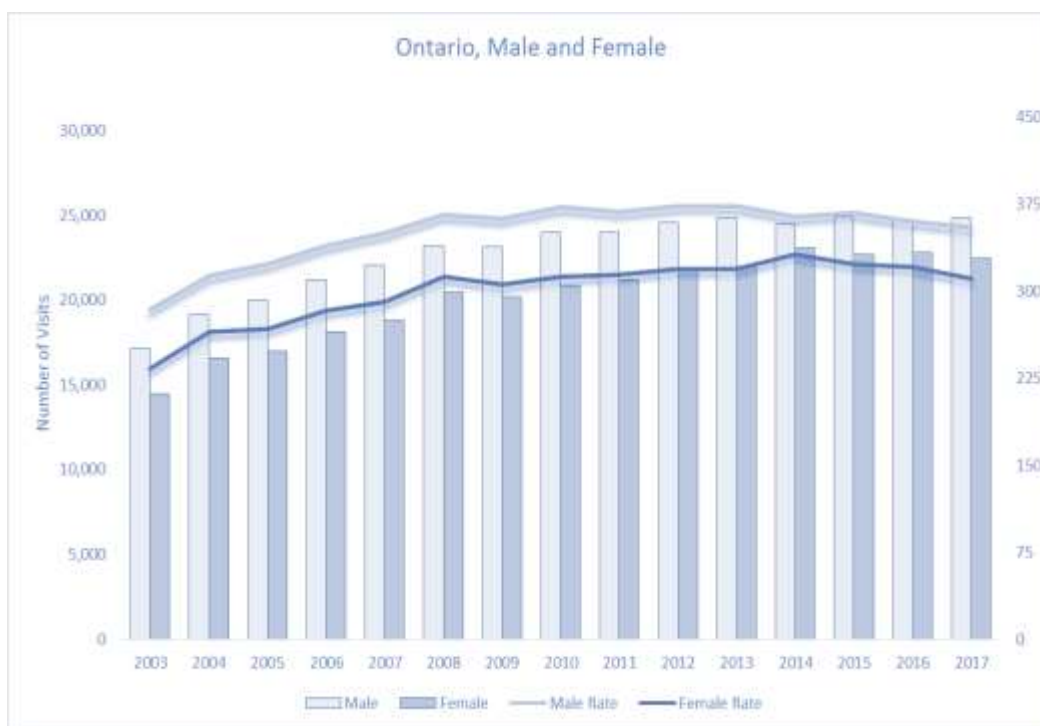
**Figure 21:** The number of DOC ED visits per year and the rate of DOC ED visits per 100,000 population per year for Ontario; 2003-2017

In Peterborough, males accounted for a greater proportion of the visits between 2003 and 2017 making up 52.9% of visits compared to females (47.1%). Overall the rate of visits among Peterborough males and females have remained relatively stable, males consistently have a higher rate of DOC related visits than females. A similar trend can be seen at the provincial level, with males consistently having a higher rate of DOC visits compared to females (Figure 23).





**Figure 22:** The number and rate of DOC ED visits in Peterborough per year by sex; 2003-2017.



**Figure 23:** The number and rate of DOC ED visits in Ontario per year by sex; 2003-2017.

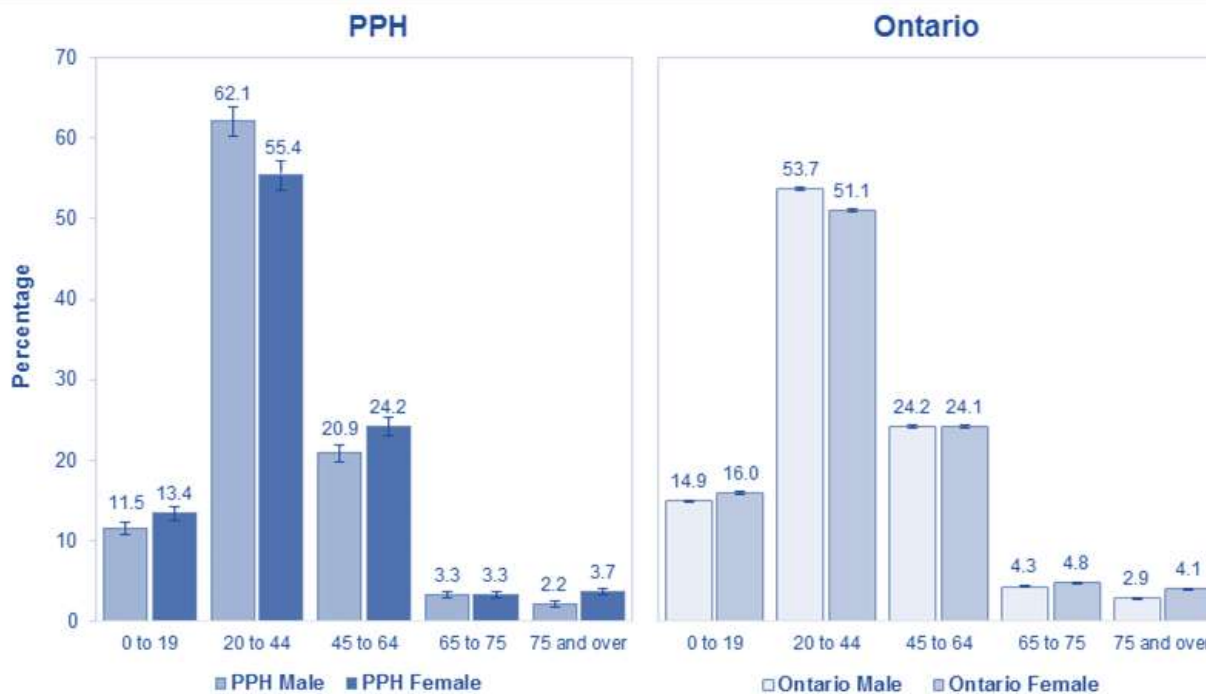
Males accounted for just over half of ED visits for DOC in Peterborough from 2003-2017. The majority of ED visits in Peterborough were for adults aged 20-64 (81.4%). Children and youth aged 19 years and younger accounted for 12.4% of visits and adults aged 65 years and older accounted for 6.2% of visits in

Peterborough (Table 6). Ontario had a similar distribution of visit proportions with 76.6% of DOC visits for adults aged 20-64 years, 15.4% for children and youth aged 19 and younger, and 8.0% for adults aged 65 years and older.

**Table 6:** Number of DOC ED visits by gender and age group and the relative frequency by age group for males, females, and total visits for Peterborough and Ontario; 2003-2017

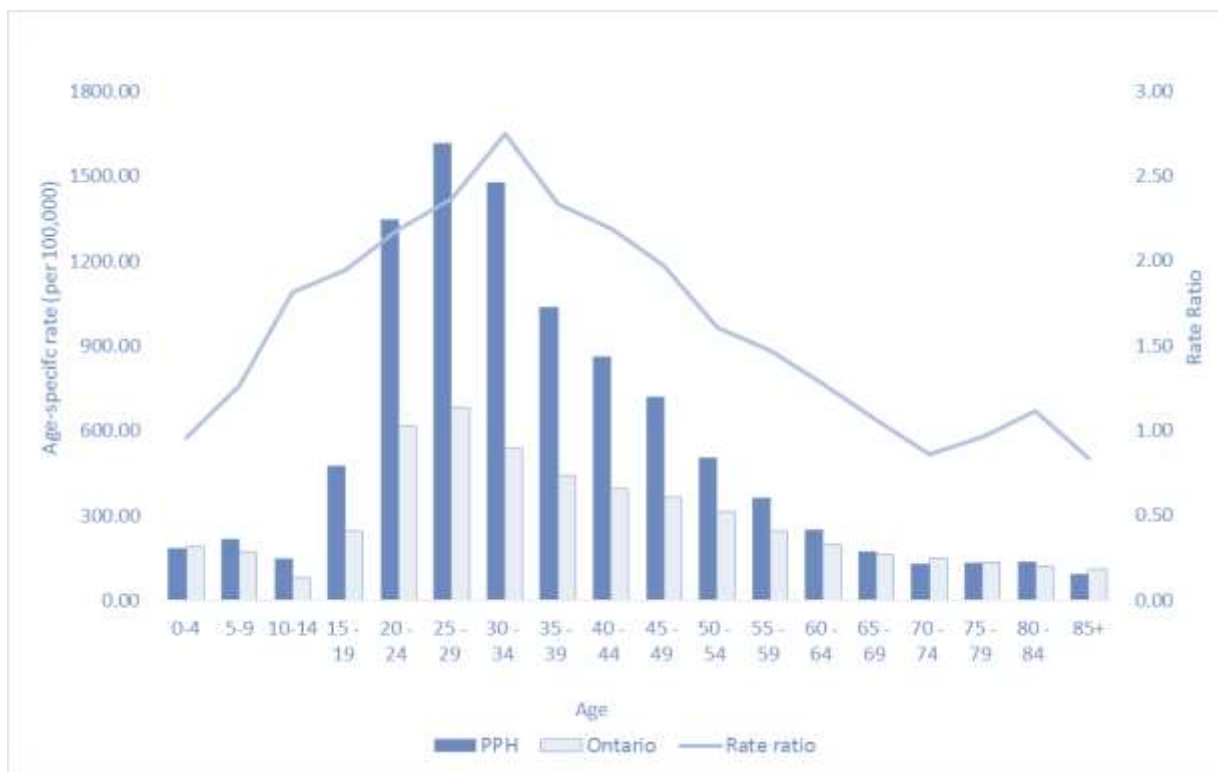
Age Group	Peterborough N (%)			Ontario N (%)		
	Males	Females	Total	Males	Females	Total
<b>0-19</b>	579 (8.6)	588 (10.3)	1,167 (9.4)	40,586 (11.9)	39,768 (13.1)	80,354 (12.5)
<b>20-44</b>	4,440 (65.8)	3,484 (61.1)	7,924 (63.6)	196,214 (57.3)	169,281 (55.9)	365,495 (56.7)
<b>45-64</b>	1,435 (21.3)	1,359 (23.8)	2,794 (22.4)	84,773 (24.8)	72,735 (24.0)	157,508 (24.4)
<b>65-74</b>	185 (2.7)	143 (2.5)	328 (2.6)	13,097 (3.8)	11,900 (3.9)	24,997 (3.9)
<b>75+</b>	107 (1.6)	130 (2.3)	237 (1.9)	7,743 (2.8)	8,885 (4.1)	16,628 (2.6)
<b>TOTAL</b>	6,746 (54.2)	5,704 (45.8)	12,450	342,413 (53.2)	302,569 (46.8)	664,982

Adults in Peterborough aged 20 to 44 accounted for the largest proportion (63.6%) of ED visits due to DOC during the period between 2003 and 2015 (Figure 24). By comparison, in Ontario, adults aged 20 to 44 only accounted for 56.7% of visits. Specifically, Peterborough males aged 20-44 made up a significantly larger proportion of visits compared to Ontario at 65.8% (95% Confidence interval 60.3-63.9) for Peterborough males and 57.3% (95% CI 53.4-53.9) for Ontario males.



**Figure 24:** The proportion of ED visits for DOC in Peterborough and Ontario by age group and gender; 2003-2017.

Between 2003 and 2017 young adults between the ages of 20 and 34 in Peterborough had the highest age-specific rates of ED visits due to DOC (Figure 25 below). Specifically, young adults aged 25 to 29 had the highest rate at 1614 visits per 100,000 people. Older adults aged 85 years and older had the lowest rate of ED visits at 91 visits per 100,000. A similar pattern of the distribution of ED visits also exists in Ontario with higher rates among young adults and lower rates among older adults. However, age specific rates in Peterborough were an average of 1.6 times greater than the province. The greatest difference in age specific rates was for 30 to 34 years old with a rate ratio of 2.75. Visit rates among Peterborough adults aged 20-44 years were on average 2.47 times greater than the province.



**Figure 25:** Age-specific rates of DOC ED visits by age group for Peterborough and Ontario residents; 2003-2017

Visits to the ED can be further sub-classified to better understand the types of DOC diagnoses that are occurring. Diseases of the pulp and periapical tissues (ICD-10 Code K04) accounted for over one third of ED visits in Peterborough (35.9%), and in Ontario (35.3%), between 2003 and 2015 (Table 7). Visits of this type include localized infections at the tip of the root of a tooth. In Peterborough, males had a greater frequency of K04 coded visits than females (39.3% vs 32.0%). The next most common visit in both Peterborough and Ontario was ‘other disorders of teeth and supporting structures’ (K08). The K08 code includes toothaches and loss of teeth and accounts for 28.1% of DOC visits in Peterborough and 26.5% of DOC visits in Ontario. Dental caries (K02) were the next most common visits codes with each accounting for approximately 6% of Peterborough visits. The frequency at which these visit types occurred in Peterborough between 2003 and 2017 is similar to the frequency in Ontario.



**Table 7:** The five most frequent types of ED visits for DOC in Peterborough and Ontario; from 2003-2017.

ICD-10 Code	Peterborough n (%)			Ontario n (%)		
	Males	Females	Total	Males	Females	Total
<b>K04</b> Diseases of Pulp and periapical tissue	3328 (48.85)	2479 (43.97)	5807 (46.64)	163,225 (47.63)	136,419 (45.04)	299,644 (46.41)
<b>K08</b> Other disorders of teeth and supporting structures	2326 (34.15)	1876 (33.27)	4202 (33.75)	115,784 (33.78)	99,551 (32.87)	215,335 (33.35)
<b>K02</b> Dental caries	596 (8.75)	372 (6.60)	968 (7.78)	24,937 (7.28)	17,249 (5.69)	42,186 (6.53)
<b>K07</b> Dentofacial anomalies (including malocclusion)	198 (2.91)	567 (10.06)	765 (6.14)	12,157 (3.55)	24,923 (8.23)	37,080 (5.74)
<b>K05</b> Gingivitis an periodontal diseases	234 (3.44)	209 (3.71)	443 (3.56)	15,451 (4.51)	14,851 (4.90)	30,302 (4.69)

### Key Points

- On average, there are over 1,000 visits per year to the ED due to diseases of oral cavity, salivary glands and jaws (specifically the diagnoses of codes K00-K008) among Peterborough residents
- Males had a higher rate of ED visits than females in Peterborough and in Ontario for all years between 2003 and 2017
- Adults between the ages of 20 and 44 make up over half of the ED visits due to DOC
- Young adults aged 25 to 29 had the highest rates of ED visits in Peterborough and Ontario
- K04 diseases of pulp and periapical tissues (e.g. abscesses) and K08 other disorders of teeth and supporting structures (e.g. toothache) were the most common ED visit types in Peterborough accounting for over half of visits

### 3.2 Oral Cancers

Oral cancer is cancer that forms in tissues of the oral cavity including the lips, tongue, roof of the mouth, oropharynx (the part of the throat at the back of the mouth), under the tongue, gums, and inside the lips and cheeks. Tobacco and alcohol are the two most important risk factors for oral cancer and the risk is even higher when these two factors are combined. Other risk factors for developing oral cancer include human papillomavirus (HPV), sun exposure to the lips, and a diet low in fresh fruits and vegetables. The risk of developing oral cancer is highest after the age of 45.<sup>4</sup>

Between 2003 and 2012 there were 231 new cases of oral cancer diagnosed among Peterborough residents. There were more cases of oral cancer for male Peterborough residents compared to females from 2003 to 2012. Almost three quarters of oral cancers occurred in males (73.6%) and the average age-standardized incidence rate of oral cancers for males was 16.7 per 100,000 population compared to 7.0 per 100,000 for females. More than half of new oral cancer cases in Peterborough between 2003 and 2012 were diagnosed in adults aged 65 years and older (60.8% of cases where age was known).

However, age was unknown for 23.8% of the total cases and were therefore not included in the age specific analysis.

**Table 8:** Incidence of oral cancers by sex including the number of new cases and the age-standardized incidence rate per 100,000 for Peterborough and Ontario; 2003-2012.

Region	Males events (rate per 100,000)	Females events (rate per 100,000)	Total events (rate per 100,000)
Peterborough	159 (16.7)	57 (7.0)	231 (11.3)
Ontario	10,239 (13.8)	4938 (5.9)	15,177 (9.6)

### Key Points

- Peterborough men have a higher average age-standardized incidence of oral cancer than women from 2003-2012
- There was no significant change in the age standardized incidence or mortality rates of oral cancer in Peterborough or Ontario from 2003 to 2012
- Deaths from oral cancer are rare in Peterborough

## Section 4: Discussion and Recommendations

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### 4.1 Discussion

In general, most Peterborough residents regularly access dental care services; 70% reported visiting a dentist in the past 12 months. However, the data also suggests concerns in affording dental care services. In Ontario, cost was cited as the main reason people had not visited the dentist in the past three years. In Peterborough, only two thirds of residents have insurance for dental care, which can be a significant factor in visiting the dentist. In 2013/2014 a significantly greater proportion of people without insurance reported visiting the dentist only for emergencies compared to people with insurance for dental services. In addition, most dental care insurance was employer sponsored implicating employment as a contributing factor to receiving oral care. Individuals with lower income were also less likely to have insurance, only half of lower income individuals have insurance compared to 80% of higher income individuals. Employment, income, and insurance are all inter-related factors that can impact the access and affordability of dental care.



Another priority group made evident in this report are older adults over the age of 65. Fewer older adults had visited the dentist in the past year compared to other age groups. In addition, only half of older adults in Peterborough reported having dental insurance. Finally, approximately one third of older adults visited a dentist less than once a year.

Overall, most Peterborough residents self-perceive as having excellent or very good oral health. However, half of residents reported having oral/facial pain or discomfort in the past month and 17% reported experiencing pain in teeth and/or gums often or sometimes. Four in five Peterborough residents reported brushing their teeth twice or more per day with a greater proportion of females compared to males. In Peterborough it appears that the age group with the lowest reported rate of twice a day brushing is youth aged 12-19 years.

When people experience an oral health crisis or are unable to access or afford dental care they are likely to visit an ED for care. Based on both the volume of visits to the ED due to diseases of the oral cavity, salivary glands, and jaws for Codes K00-K08 (an average of 1,000 per year) and standardized rates of visits that appear to be nearly double those of the province, improved access to timely, affordable dental care should be a priority for this community.

This is all the more evident among young adults between the ages of 20 and 44 who accounted for approximately 60% of ED visits and whose age-specific rates of ED visits were an average of 2.3 times more than Ontario. Within this group, the subset of adults aged 20-34 had the highest age-specific rates of ED visits. Approximately two-thirds of the ED visits between 2003 and 2017 were due to oral health issues that were likely preventable such as infections at the root of a tooth and toothaches. Improved



access to affordable timely dental care and improved oral health behaviours may reduce the need for ED visits for diseases of the oral cavity.

## 4.2 Recommendations

Based on the data presented in this report, Peterborough Public Health has the following recommendations for action:

- Continue to promote and support policies for continued access to optimally fluoridated drinking water within the City of Peterborough and identify opportunities to expand access in rural parts of the health unit;
- Explore increasing our community outreach to include preventive services (such as cleaning, fluoride varnish application and pit and fissure sealants) offered in school/community based settings;
- Continue to work in partnership with community partners and advocate to provide funding for Dental Treatment Assistance Fund for eligible residents; and
- Continue to support provincial advocacy efforts re: expanding the existing public health programs for low-income children (HSO) to include both low-income adults and seniors.

## References

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<sup>1</sup> Health Canada. (2010). Report on the findings of the oral health component of the Canadian Health Measures Survey 2007–2009. Ottawa: Health Canada. Retrieved from:

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