

**City of Hamilton**

**Public Health & Community Services  
Department**

**Social and Health Issues  
Report 2005**

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## 1.0 INTRODUCTION

The City of Hamilton envisions a safe, healthy, sustainable community and a great place in which to work, live, and play that offers residents and businesses growth and opportunity. Implicit in this vision is the community's commitment to maintaining a Healthy, Safe and Green City (Strategic Plan, City of Hamilton 2004).

The 2005 Social and Health Issues Report (SHIR) supports this vision by helping users to monitor the health status of City residents. This report, however, goes one step further by describing determinants of health in the City of Hamilton. Determinants of health are the range of personal, social, economic and environmental factors that determine the health status of individuals and populations (Canadian Public Health Association 1997). By also describing important determinants of health in the City of Hamilton, this report helps readers to understand the health of City of Hamilton residents in the context of their daily surroundings.

Each indicator in the 2005 SHIR provides a snapshot of how the City of Hamilton is doing in key public health areas. These areas are identified as priority areas for reporting by the Ministry of Health and Long-Term Care in the Mandatory Health and Programs and Services Guidelines (1997). They include mortality rates, morbidity rates, reproductive outcomes, prevalence of risk factors for preventable diseases, and indices of dental health. This report also contains a Highlights section that summarizes important findings from each chapter. Readers are encouraged to seek further details about these findings in the full report.

With each indicator in the full report, a description and key message about the information is presented. To allow readers to evaluate progress, where applicable, comparisons are made between the City of Hamilton and Middlesex-London, the City of Ottawa, and Windsor-Essex health regions. Work by Statistics Canada, based on 24 social and economic characteristics known to influence health status, such as gender distribution and employment rate, showed that Middlesex-London, the City of Ottawa, and Windsor-Essex are more socio-economically comparable to the City of Hamilton than other health regions in the province (Appendix A).

By comparing health regions of similar social and economic characteristics, we can assess the relative effectiveness of health promotion, prevention, and health status monitoring activities across regions. This way, the identified differences in health status are less likely due to socio-economic determinants of health. This approach was used to evaluate indicators in the sections entitled General Health; Chronic Conditions, Healthy Lifestyles and Injury Prevention; and Family Health.

Whether comparing the City of Hamilton to selected health regions, to the provincial average, or over time, this report uses the most up-to-date information available to describe the health of City of Hamilton residents. Data used in this report come from provincial and nation-wide data sources, such as the 2003 Canadian Community Health Survey, the 2001 Census, and the Provincial Health Planning Database and local data sources, such as the Rapid Risk Factor Surveillance System and the Early Development Instrument (EDI). Other information has been previously reported in important corporate-wide documents, such as the 2004 Annual Sustainability Indicators Report and the Nutritious Food Basket Report 2004.

We look forward to having the 2005 SHIR read by city staff, elected officials, community partners, and city residents and hope that it supports us in making the City of Hamilton a sustainable community.



## 2.0 METHODS

This report summarizes the most current local, provincial, and comparison community information we have about the health of City of Hamilton residents. It focuses on the health of populations, and any direct inference to a specific individual or clinical situation should not be made.

All data were analyzed using SPSS 13.0 (SPSS Inc., Chicago, Illinois) and are presented according to source guidelines, including using weighted values where appropriate and collapsing response categories when required. Where comparisons were made between age groups, time periods or health regions, Pearson Chi-Squared tests of statistical significance were performed. Differences associated with a p-value of less than 0.05 were considered statistically significant. Any significant differences observed were noted as key messages.

In order to facilitate comparisons between regions or time periods where counts were low, rates per 100,000 population were computed. These rates were calculated using population estimates updated in 2004 by Statistics Canada.

Age-standardized rates were calculated in order to facilitate comparisons between health regions and time periods, where possible. These rates take into consideration the differences in age distribution between populations compared. In this report, these rates were standardized to the 1991 Census Canada Population. Where standardization was not possible or appropriate, crude rates or counts are presented.



### 3.0 HIGHLIGHTS

A few highlights are selected from each section of the report and noted in this section. These highlights were selected in consultation with program delivery staff and in many cases point to other indicators in this report.

#### Immigrant Populations

##### *Context*

Immigrants new to a country often require aid and support to settle and adjust to their new environment. This is a crucial time for them as they try to gain stability and build a secure life. Having access to services which can help orientate them to life in Canada can facilitate their sense of belonging in the community. Feeling a sense of belonging in the community is important in building confidence and self-esteem.

##### *Key Message*

- In 2001, the number of recent immigrants living in the City of Hamilton was 18,685. This is approximately 133% of recent immigrants that had declared the City of Hamilton as their intended destination when landing in Canada.

##### *Public Health Implications*

The City of Hamilton Public Health and Community Services must be flexible when delivering the select health services it offers. This requires a thorough understanding of the needs and preferences of persons from diverse cultures and communities and race relations training and strategies. Public health will be required to place a greater emphasis on issues of access and equity to health services and programs. Inclusive communication strategies needs to be made to overcome language barriers and ensure wide out-reach to all residents will be increasingly important.

#### Low Income

##### *Context*

Low income affects access to health related necessities such as to shelter, nutritious foods, warm clothing and education. It can also affect the overall well-being of an individual as low income may increase stress, lower self-esteem and limit participation in the community.

##### *Key Message*

- Compared to Ontario, a substantially higher proportion of the population in the City of Hamilton live below the low income cut-off (18.8% in the City of Hamilton vs. 13.6% in Ontario). This is true for all age groups, but is worse for those aged 75 years or older.

##### *Public Health Implications*

A high proportion of individuals with low income in the City of Hamilton translates into a higher demand for social assistance and subsidized social and health programs. Low income individuals are subject to greater risk of ill-health and hence require more health care services. The City of Hamilton's Public Health and Community Services Department needs to recognize the barriers to good health that low income individuals may face when tailoring services to these individuals. Factors related to the affordability of health care services, medicine or treatment, and transportation issues should all be addressed when planning and implementing health services.



## General Health

### *Context*

Access to proper health services is vital to maintaining an individual's health and well-being.

### *Key Message*

- Eleven percent of the population in the City of Hamilton felt they had unmet health care needs. The top reasons provided by these persons as to why their health care needs were not met include long waiting times and unavailability of health care at the time required.

### *Public Health Implications*

The City of Hamilton Public Health and Community Services needs to ensure that the select health services it provides are equally accessible to all individuals. This implies the need to provide services tailored to the needs of the community in accessible locations. Ongoing surveillance of emerging health issues in the community is required to properly inform program planning of current public health services. Effective communication of available services to residents is also a key to successfully providing accessible health care services in response to citizen demand.

## Early Development Index

### *Context*

The Early Development Instrument (EDI) assesses children's readiness to learn at school in 5 behavioural and developmental domains: physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. A 'normative sample', based on 93.3% of the full sample of children, is used as a standard to compare domain scores across communities. A child's readiness to learn affects his or her general health, well being and competence, not only in the early years, but also in later life.

### *Key message*

- In 2005, the average scores of children in Hamilton were as high as that of the normative sample in all domains except two. These were the Language and Cognitive Development domain, in which Hamilton children scored higher, and the Communication Skills and General Knowledge domain, in which Hamilton scores were lower.

### *Public health implications*

It is important that children in the early years of schooling are behaviourally and developmentally prepared for the challenges and performance goals of the educational system. Analysis of the 2005 EDI scores has shown that over 12% of senior kindergarten students in Hamilton may be unprepared for the years of schooling ahead. These children had low scores in two or more of the readiness to learn domains. Children with low EDI scores may not be able to benefit fully from the educational environment to which they are exposed, and may therefore be at a higher risk of failure in school. Being aware of how well children are doing when they enter school allows school boards and service providers to make adjustments and provide interventions that will help children immediately and benefit families with young children in the future. The Best Start initiative is an example of how school boards, service providers, parents, government and community can work to increase children's competency and improve the well-being of families in Hamilton.



## Physical Activity

### *Context*

Substantial evidence shows that increasing physical activity is important to achieve and maintain a healthy body weight, blood pressure, serum cholesterol, and to reduce stress levels. To improve health, it is recommended that a person do 30 minutes of moderate physical activity (e.g., brisk walking) four days per week, or 60 minutes of light physical activity every day of the week.

### *Key Message*

- Almost half -44%- of the population in the City of Hamilton aged 12 years and older reported that they are physically inactive.

### *Public Health Implications*

Physical inactivity is a major risk factor for obesity, type II diabetes and cardiovascular disease (CVD). Knowledge and awareness of CVD risk factors are not sufficient to change behaviour. To effectively reduce this risk, all potentially modifiable CVD risk factors such as physical inactivity, smoking and unhealthy eating should be targeted comprehensively. Efforts to increase physical activity in the City of Hamilton can be strengthened if multiple intervention strategies are implemented. Getting active can be enhanced by: (a) schools providing daily physical education for students; (b) recreation centres providing physical activity programs through their pools, arenas and gymnasiums; (c) buildings, including schools and workplaces, be modified to encourage the climbing of stairs and decrease the use of elevators; and (d) employers investing in on-site health promotion programs for employees, with incentives to encourage employers to participate in fitness activities e) designing and building communities to encourage walking and cycling. Health behaviour is a consequence of a complex array of inter-related conditions and underlying causes, many of which are external to individuals. Modifying risk factors for chronic conditions can best be addressed by taking action to create supportive environments, mobilize community action and implement healthy public policy. Motivated by this the department is currently developing an Obesity Prevention Strategy and contributing to the GRIDS process.

## Influenza

### *Context*

Influenza is a contagious respiratory illness caused by influenza viruses that can result in mild to severe illness, and at times can lead to death. Influenza viruses spread from person to person, mainly in respiratory droplets from coughs and sneezes. Though much less frequent, influenza can also spread when a person touches respiratory droplets on another person or an object and then touch their own mouth or nose (or someone else's mouth or nose) before hand washing. Each year, influenza affects the health of many people, disrupting their ability to work, attend school and participate in other daily activities.

### *Key Message*

- The emergence of Severe Acute Respiratory Syndrome (SARS) in 2003 led to an increase in the number of laboratory tests requested by physicians for cases of influenza-like illness. This is likely to have resulted in an increase in the number of influenza cases detected during the last two influenza seasons, (415 cases in 2003/04 vs. 62 in 2002/03). In the 2003/2004 season the incidence of influenza was significantly higher than in the previous four years, in part because the annual vaccine may have been less effective and not provided to enough people early enough in the influenza season.



### *Public Health Implications*

To reduce the number of individuals who become ill with influenza during the influenza season, the City of Hamilton's Public Health provides free influenza vaccination to the public. To ensure equal access to all residents, multiple dates, times and locations throughout the city are selected for the vaccination clinics each year. Communication and advertisement of these free clinics is done to ensure the public can plan to attend a most convenient clinic.

Partnerships with hospital infection control committees, long term care facilities and schools are critical to our success and integral to our pandemic planning process.

## **Drinking Water and Boil Water Advisories**

### *Context*

Microbiological indicators, such as bacteria, may appear in source water and emanate from wildlife, livestock operations, septic systems and sewage treatment plants. Since bacteria can cause water-borne disease, microbiological quality is the most important aspect of drinking water safety. Other organic parameters and inorganic parameters, such as salts and metals, are also present in source water.

In 2004, approximately 80 drinking water systems were regulated under the Safe Water Act. According to this legislation, when a laboratory determines that a water sample does not meet the Ontario Drinking Water Standard or an operator/owner of a regulated drinking water system observes or becomes aware of a situation where the safety of drinking water may be compromised, it must be reported to the Medical Officer of Health (MOH) as an Adverse Water Quality Incident (AWQI). When an AWQI occurs, the owner/operator of the regulated drinking water system is required to take prescribed Corrective Actions to remedy the situation. One of the Corrective Actions is to follow the direction of the MOH, who may issue a Boil or Drinking Water Advisory, depending on the contaminant or situation, and direct the owner/operator of the water system to notify the affected users. In 2004, there were 244 AWQIs reported to the Medical Officer of Health in the City of Hamilton.

### *Key Message*

- In 2004, a total of 30 Drinking Water and Boil Water Advisories were issued by the Medical Officer of Health to water systems owners/operators throughout the City of Hamilton.

### *Public Health Implications*

Of the 30 advisories issued in 2004, 29 were Boil Water Advisories and one was a Drinking Water Advisory. This suggests that microbiological contaminants, particularly bacteria, were the majority of the contaminants responsible for Water Advisories issued in the City of Hamilton in 2004. To further improve the quality of drinking water within Hamilton, the City of Hamilton is undertaking a city-wide water and wastewater master plan to develop policies and strategies for its water and wastewater servicing over the next 30 years. To ensure a continued safe drinking water supply to Hamilton residents who depend on municipal groundwater, the City has initiated The Groundwater Resources and Wellhead Protection Partnership and study. Outcomes measured in this study will help develop a plan to protect the reliability of groundwater quality.



## **4.0 THE PEOPLE OF HAMILTON**

This section provides an overview of the demographic make-up of the population in the City of Hamilton. It starts with the basic population structure, both current and projected. It then provides information on the cultural diversity of the City of Hamilton's population and on family structure.



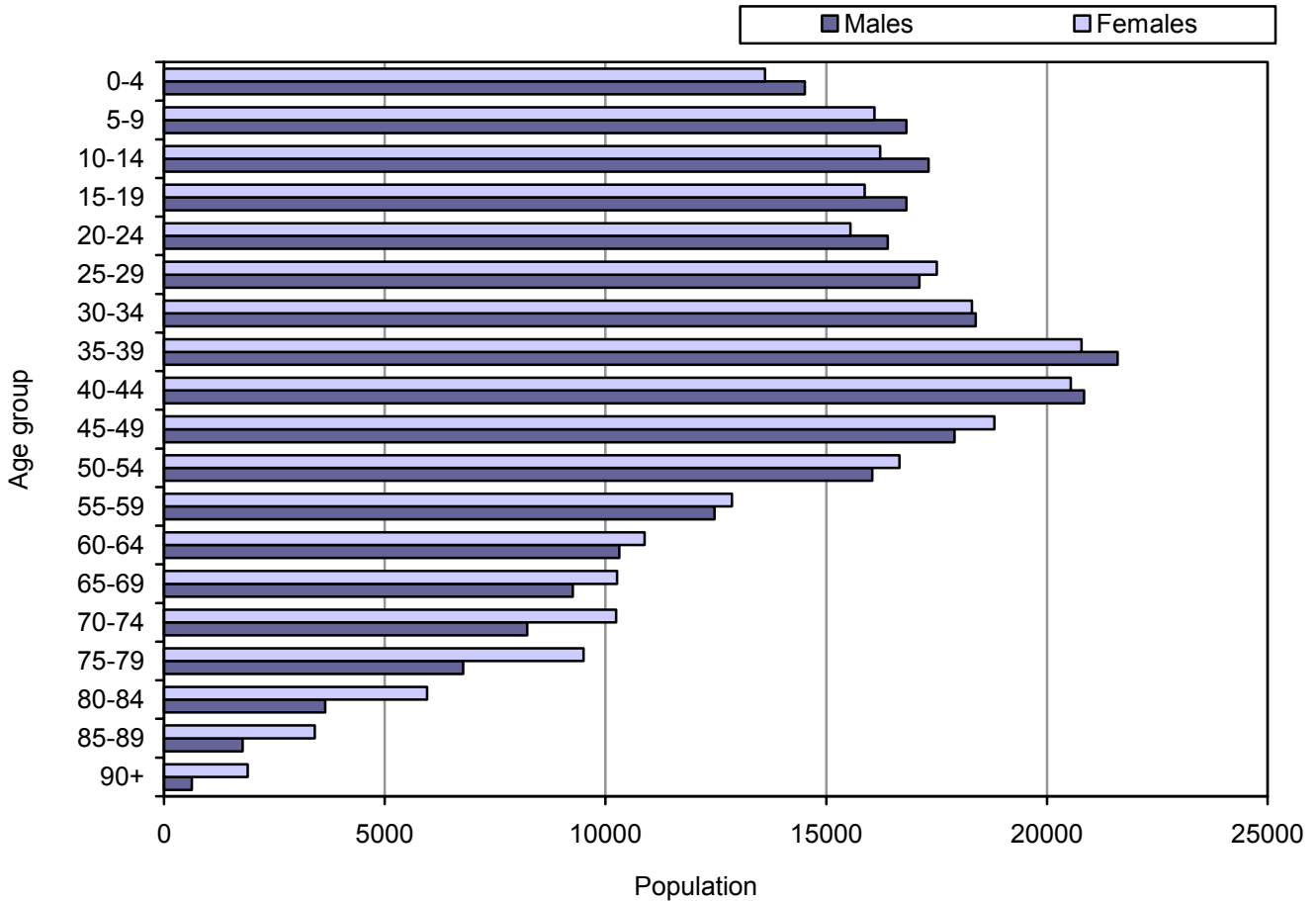
## POPULATION BY AGE & GENDER

**Description:**     ▪ Population distribution by age group and gender.

**Key Message:**   ▪ The high population level in the 35 to 44 years age group is a combination of the 'baby boom' and increased immigration among this cohort that started in the late 1980's.

                          ▪ There are significantly more females age 65 years and older than males in the City of Hamilton.

**Population by age group and gender, City of Hamilton, 2001**



Source: Statistics Canada, Census 2001



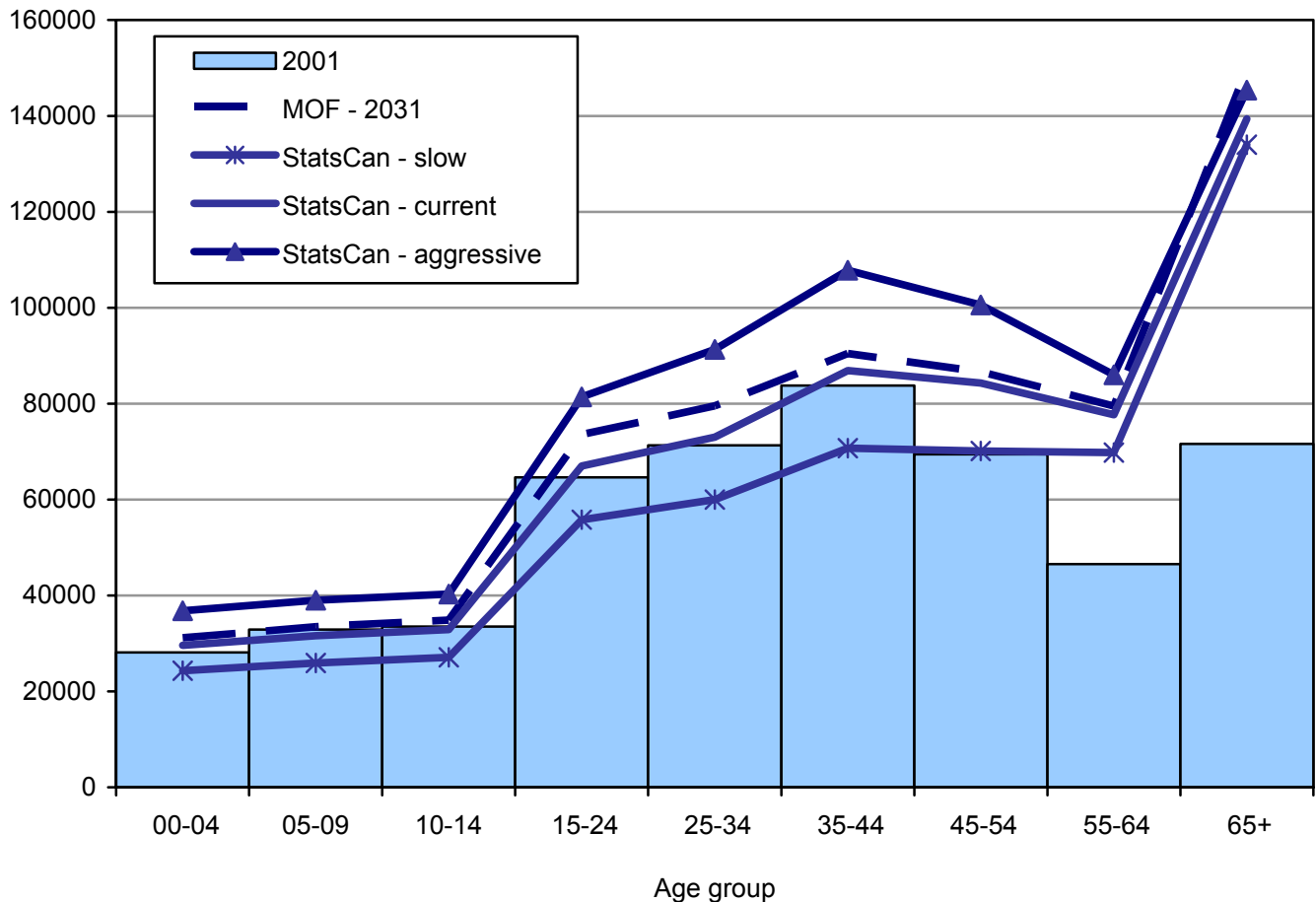
## POPULATION PROJECTIONS

- Description:**
- Population composition by age group for 2001 and population projections by age group for the year 2031 as per the Ministry of Finance projections compared to Statistics Canada & The Centre for Spatial Economics' projections based on slow, current and aggressive growth scenarios as cited in the City of Hamilton's Growth Related Integrated Development Strategy (GRIDS).
  - Population projections can assist in long-term planning and allocation of resources.

- Key Message:**
- The four different population projections all convey the same message that in the City of Hamilton in 2031, there will be a comparatively smaller proportion of children and youth aged 0 to 14 years and a comparatively larger proportion of the older population age 65 years and older.

**Population by age group 2001, Population projections by age group 2031 (Ministry of Finance projections vs. Statistics Canada's slow, current and aggressive population growth scenarios), City of Hamilton**

Population



Source: 2001 Population - Statistics Canada, Census 2001; Population Projections for 2031- Statistics Canada & The Centre for Spatial Economics and Ontario Ministry of Finance.



## DEPENDENCY RATIO

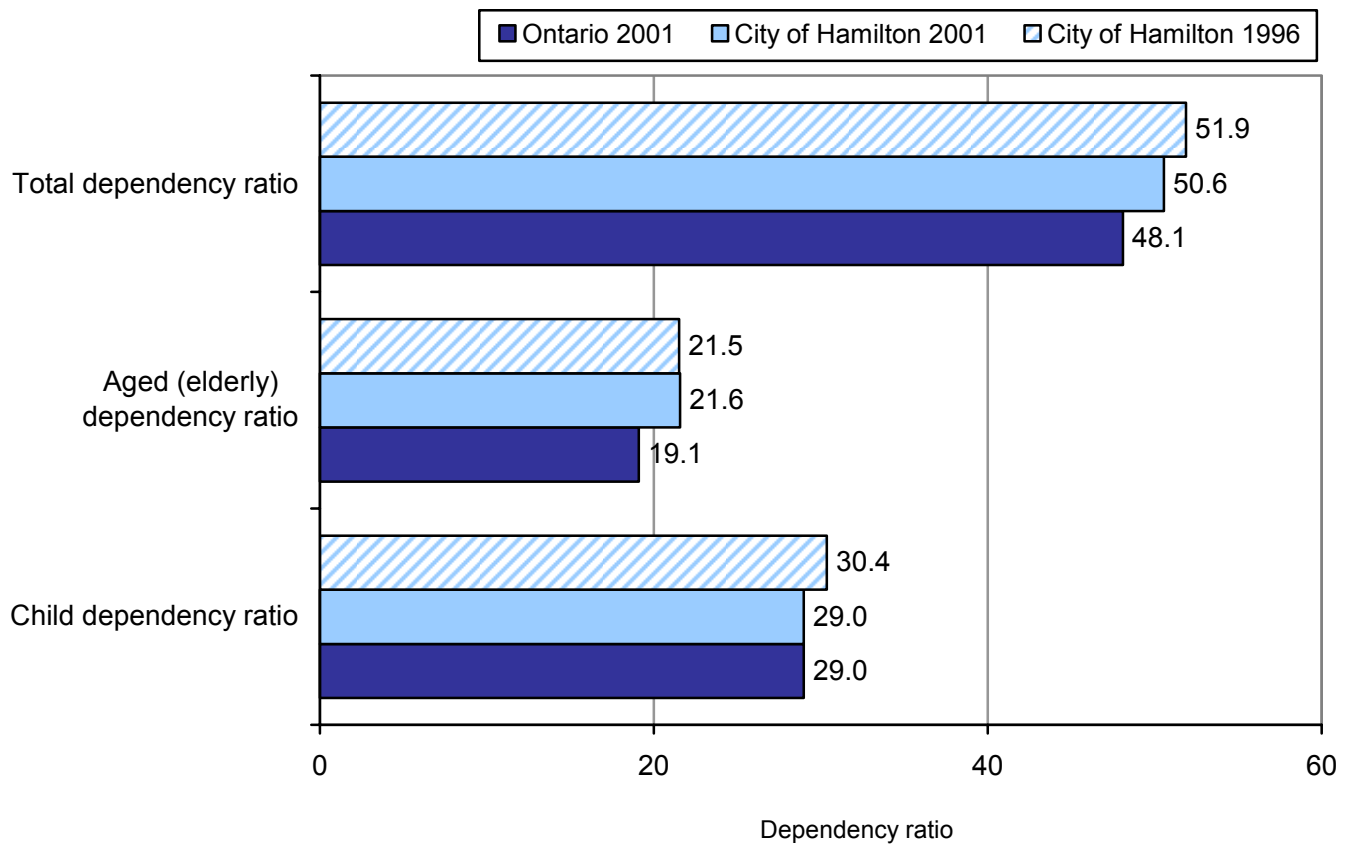
**Description:**

- A dependency ratio is a comparison of the populations considered dependent (children aged 0 to 14 years and the elderly aged 65 years and over) to the population of working age (aged 15 to 64 years).
- Presented as the number of dependents for every 100 people in the working age population.
- Dependency ratios are indicators of areas that are economically stressed due to the higher number of people who are likely economically dependent relative to those who are likely to be earning a wage.

**Key Message:**

- For every 100 working adults in the City of Hamilton in 2001, there were 29 child dependents and 22 elderly dependents, for a combined ratio of approximately 1 dependant for every 2 working adults.
- Since 1996, the City of Hamilton's child dependency ratio has decreased, but its aged dependency ratio has remained constant.
- The City of Hamilton's aged dependency ratio is slightly higher than the provincial average. The elderly dependency ratio will likely increase, as baby boomers enter retirement age.

**Total, aged (elderly) and child dependency ratio, City of Hamilton 1996 and 2001, Ontario, 2001**



Source: Statistics Canada, Census 1996 and 2001

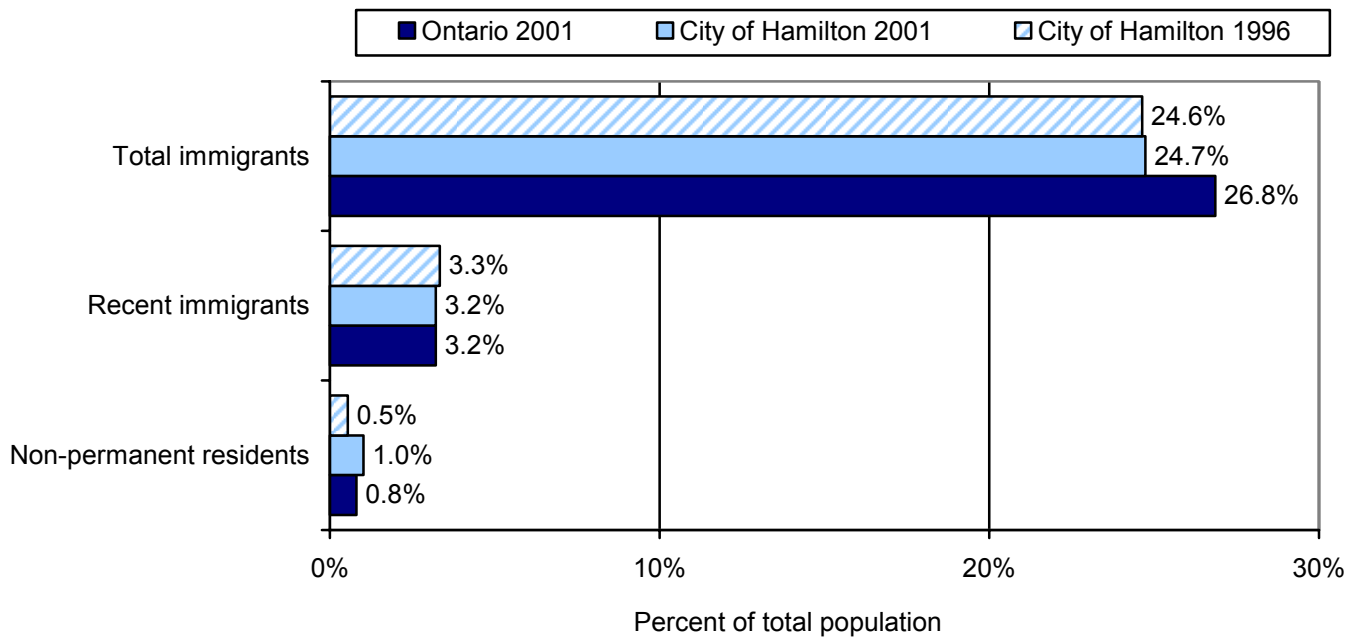


## IMMIGRANTS

- Description:**
- Total immigrants refer to the percentage of people who are, or have been, landed immigrants in Canada.
  - Recent immigrants are landed immigrants who have come to Canada in the 5 years preceding the Census day.
  - Non-permanent residents refer to people from another country who had an employment authorization, a student authorization, a Minister's permit, or who were refugee claimants at the time of the census and the family members living with them.
  - Immigrants usually have health and social needs that are different from non-immigrants.

- Key Message:**
- A quarter of the City of Hamilton's population are immigrants or are foreign-born. This is a slightly smaller proportion than that for Ontario (24.7% vs. 26.8%).
  - The percentages of recent immigrants and non-permanent residents in the City of Hamilton population are consistent with the provincial percentages.
  - The proportion of non-permanent residents increased in 2001 over the 1996 proportion.

**Total and recent immigrants, non-permanent residents, City of Hamilton 1996 and 2001, Ontario 2001**



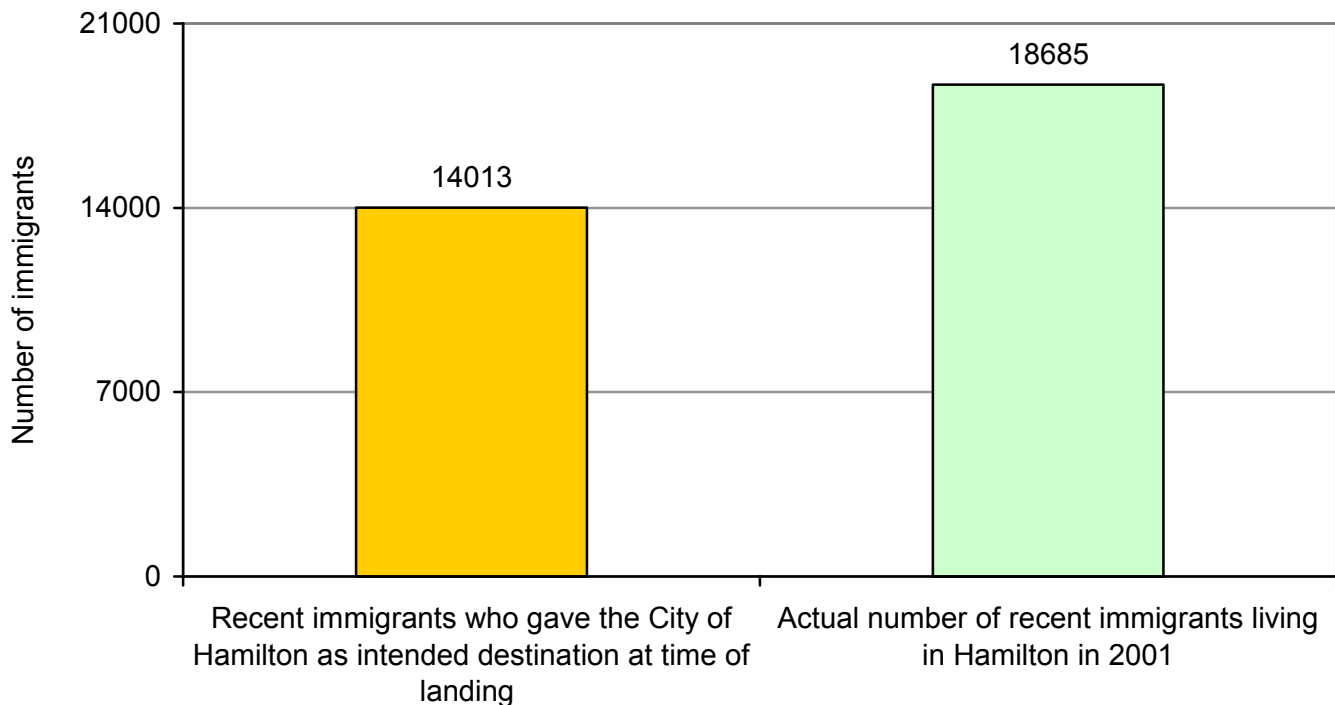
Source: Statistics Canada, Census 1996 and 2001



## SECONDARY IMMIGRANTS

- Description:**
- Recent Immigrants who gave the City of Hamilton as their intended destination compared to the actual number of recent immigrants living in the City of Hamilton in 2001.
  - Recent immigrants refer to those who have immigrated during the last 5 years before the census (1996 to 2001).
  - Secondary immigration is when an immigrant moves from the original intended destination place they declared at the time of landing to another destination in Canada.
  - This differs from primary immigration which is when an immigrant arrives and lands into the place of intended destination in Canada directly from a country outside of Canada.
  - Information collected in the Census, only pertains to primary immigration and not to secondary immigration.
- Key Message:**
- There were 14013 recent immigrants to Canada who had declared the City of Hamilton as their intended destination when landing.
  - In 2001, the actual number of recent immigrants living in the City of Hamilton was 18685. This is approximately 133% of recent immigrants that had declared the City of Hamilton as their intended destination when landing and highlights the issue of secondary immigration in the City of Hamilton.

***Immigrants who landed between 1991 and 2001 and gave the City of Hamilton as their intended destination compared to the actual number of immigrants who landed between 1991 and 2001 living in the City of Hamilton in 2001***



Source: Canadian Labour and Business Centre, Citizenship and Immigration Canada data, Statistics Canada, Census Data

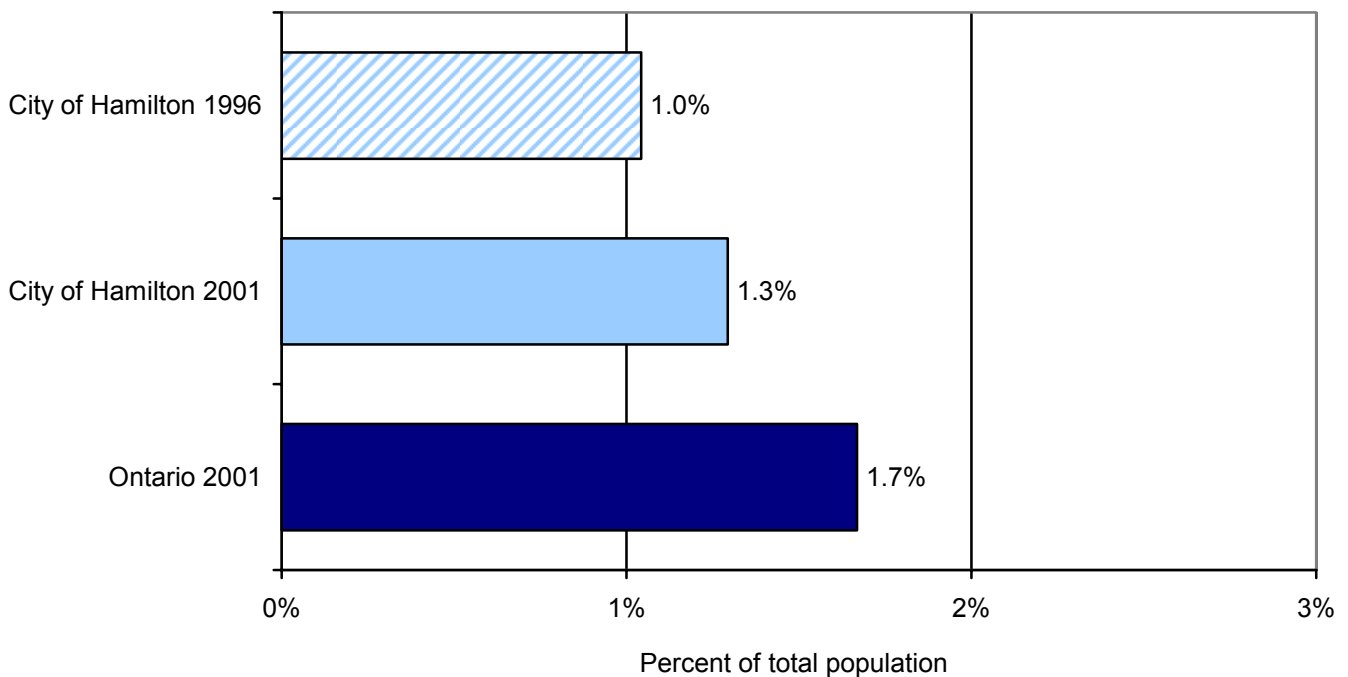


## ABORIGINALS

- Description:**
- Aboriginal People are those persons who identified themselves with at least one Aboriginal group and/or those who reported being a Treaty Indian or a Registered Indian as defined by the Indian Act and/or those who were members of an Indian Band or First Nation.
  - Aboriginal persons usually have health and social needs that are different from non-aboriginal persons.

- Key Message:**
- A very small proportion (1.3%) of the City of Hamilton population report 'aboriginal self-identity'.
  - This has not changed significantly since 1996, and is comparable to the provincial proportion.

**Aboriginal population, City of Hamilton 1996 and 2001, Ontario, 2001**



Source: Statistics Canada, Census 1996 and 2001

- Limitations:**
- Aboriginal persons are under-represented on the Census. This is because the Census does not survey persons living on reservations, and the reservation is usually reported as their primary place of residence. This is despite the fact that the aboriginal population is relatively mobile and many aboriginal persons spend significant amounts of time living in the City of Hamilton. (Source: Key informant meeting with local aboriginal community workers, March 2004).



## HOME LANGUAGE

- Description:**
- The top ten languages spoken at home by the population of the City of Hamilton.
  - Reflects the ethnic and cultural diversity in the community and is useful for addressing language-based barriers to services.

- Key Message:**
- A large majority of the City of Hamilton population speak English at home at least some of the time. This proportion is slightly higher than the provincial proportion, and significantly higher than the national proportion.
  - The next three most frequently reported languages spoken at home in the City of Hamilton are Italian, Polish and French.

***Top ten languages spoken at home, City of Hamilton and corresponding Ontario proportions, 2001***

	City of Hamilton	Ontario
English	91.5%	89.4%
Italian	3.3%	2.0%
Polish	1.6%	1.0%
French	1.5%	4.6%
Portuguese	1.4%	1.2%
Chinese	1.3%	3.6%
Serbian	1.0%	0.3%
Croatian	1.0%	0.3%
Arabic	1.0%	0.8%
Spanish	0.9%	1.1%

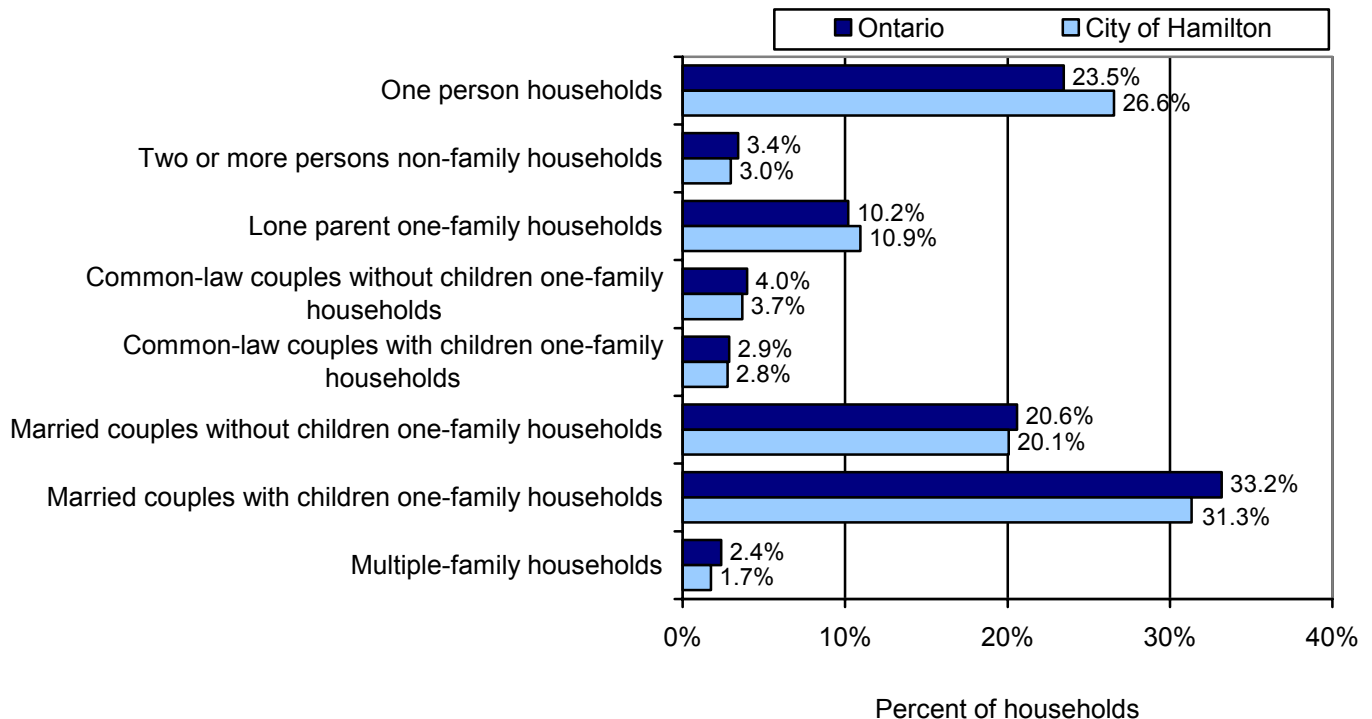
*Source: Statistics Canada, Census 2001*



## FAMILY STRUCTURE

- Description:**
- Person or a group of persons who occupy the same private dwelling, by household type (one-family household, multiple-family household, or non-family households), expressed as percentage of all households.
  - One-family household refers to a single census family with or without other non-family persons including: married couples with or without children, couples living common-law with or without children, or lone parents living with one or more children.
  - Multiple-family household refers to households with two or more census families (with or without additional non-family persons).
  - Non-family household refers to either one person living alone or to a group of two or more people who share a private dwelling, but who do not constitute a census family
- Key Message:**
- Over half of households in the City of Hamilton are married couple one-family households with or without children, and greater than thirty percent of the City of Hamilton households are made up of married couples with children.
  - A quarter of the City of Hamilton households are comprised of one person living alone.
  - The breakdown of household types in the City of Hamilton is similar to that of Ontario with a few exceptions. When compared to Ontario, a smaller percentage of the City of Hamilton households consist of married couples with children, and a higher percentage of households consist of single persons living alone. The City of Hamilton also has a higher percentage of lone-parent households.

**Private households by household type, City of Hamilton and Ontario, 2001**



Source: Statistics Canada, Census 2001



## 5.0 SOCIO-ECONOMIC PROFILE

This section provides an overview of social and economic characteristics of the population in the City of Hamilton. It starts with education and employment trends. It then presents some economic indicators describing the general population (e.g. census family income and non-family person income), and persons with low income. Lastly, it provides indicators related to housing.

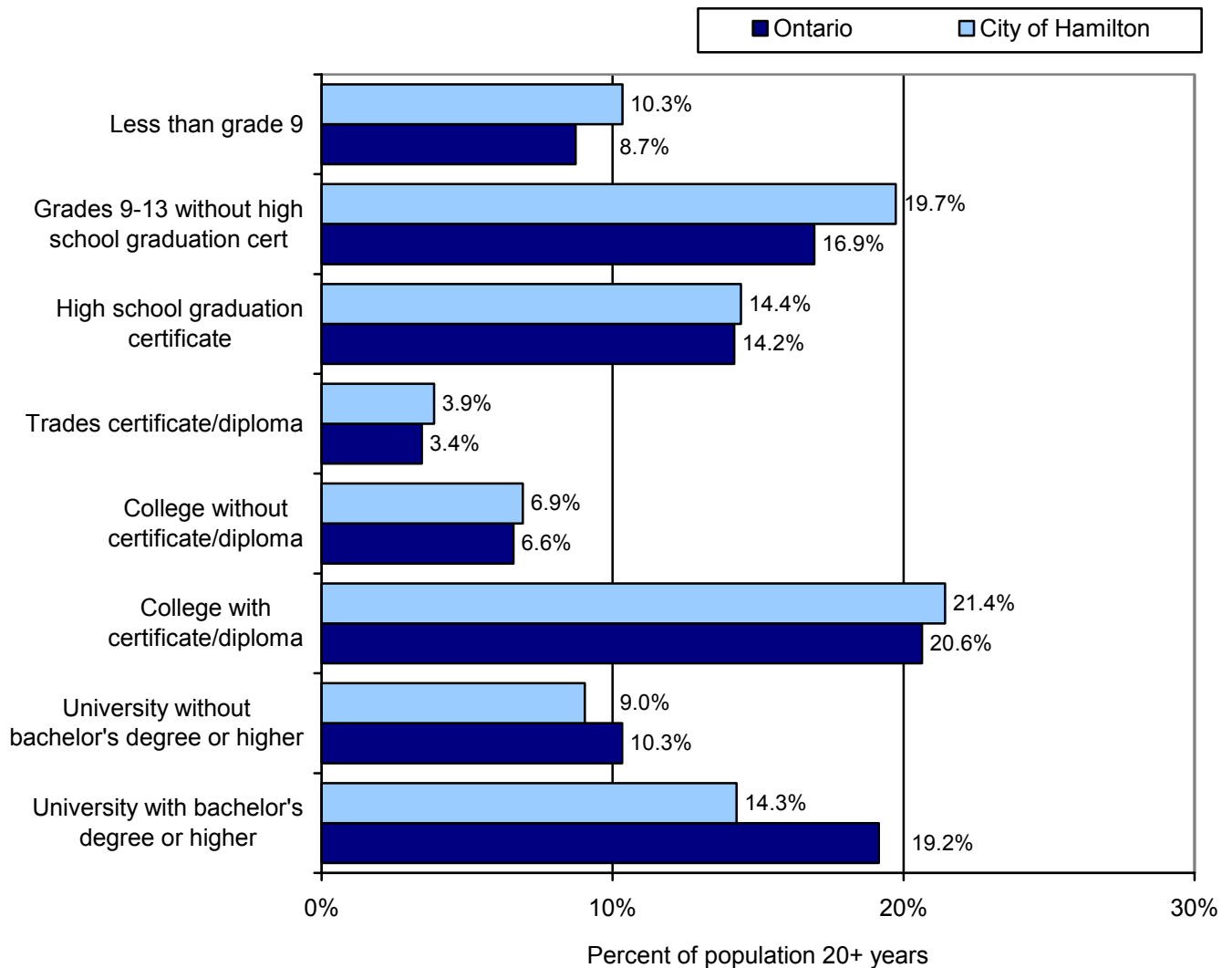


## HIGHEST LEVEL OF EDUCATION ACHIEVED

**Description:** The population of the City of Hamilton age 20 years and older by the highest level of education achieved.

- Key Message:**
- Almost a third of the City of Hamilton population 20 years and older have not attained a high school graduate certificate.
  - Compared to Ontario, a higher proportion of the City of Hamilton population report less than high school or successful high school education.
  - In the City of Hamilton, a higher percentage of the population reported having achieved a trade-related or college education compared with Ontario.
  - The proportion of the City of Hamilton population with some university education or who have completed university education is below the provincial and national proportions

**Highest level of education achieved for population 20 years of age and over, City of Hamilton and Ontario, 2001**



Source: Statistics Canada, Census 2001

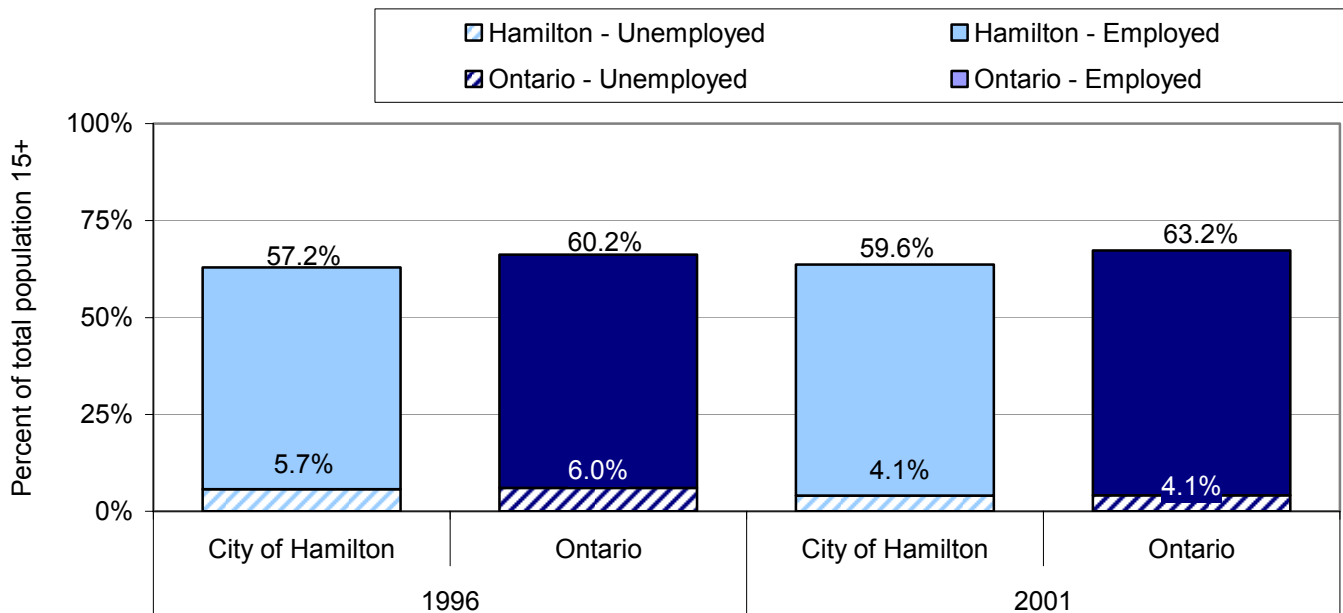


## EMPLOYMENT AND UNEMPLOYMENT

- Description:**
- The labour force participation rate for the population 15 years of age and over is the persons employed and person unemployed, expressed as a percentage of the total population 15 years of age and over.
  - Employed persons are those who, during the week (Sunday to Saturday) prior to Census Day (May 15, 2001): (a) did any work at all for pay or in self-employment or without pay in a family farm, business or professional practice; (b) were absent from their job or business, with or without pay, for the entire week because of a vacation, an illness, a labour dispute at their place of work, or any other reasons.
  - Unemployed persons are those who, during the week (Sunday to Saturday) prior to Census Day (May 15, 2001), were without paid work or without self-employment work and were available for work and either: (a) had actively looked for paid work in the past four weeks; (b) were on temporary lay-off and expected to return to their job; or (c) had definite arrangements to start a new job in four weeks or less.
  - Unemployment rates do not capture the population that has stopped actively looking for a job or that does not participate in the labour force, such as retirees or people who are unable to work due to disability, etc.

- Key Message:**
- Recent labour force participation rates have remained relatively stable in the City of Hamilton at approximately two thirds of the population working or looking for work.
  - Compared to the City of Hamilton population, a slightly larger proportion of the Ontario population participates in the labour force.
  - The proportion of City of Hamilton population who are unemployed approximates the provincial proportion.

**Population 15 years and over in the labour force, employed and unemployed, City of Hamilton and Ontario, 1996 and 2001**



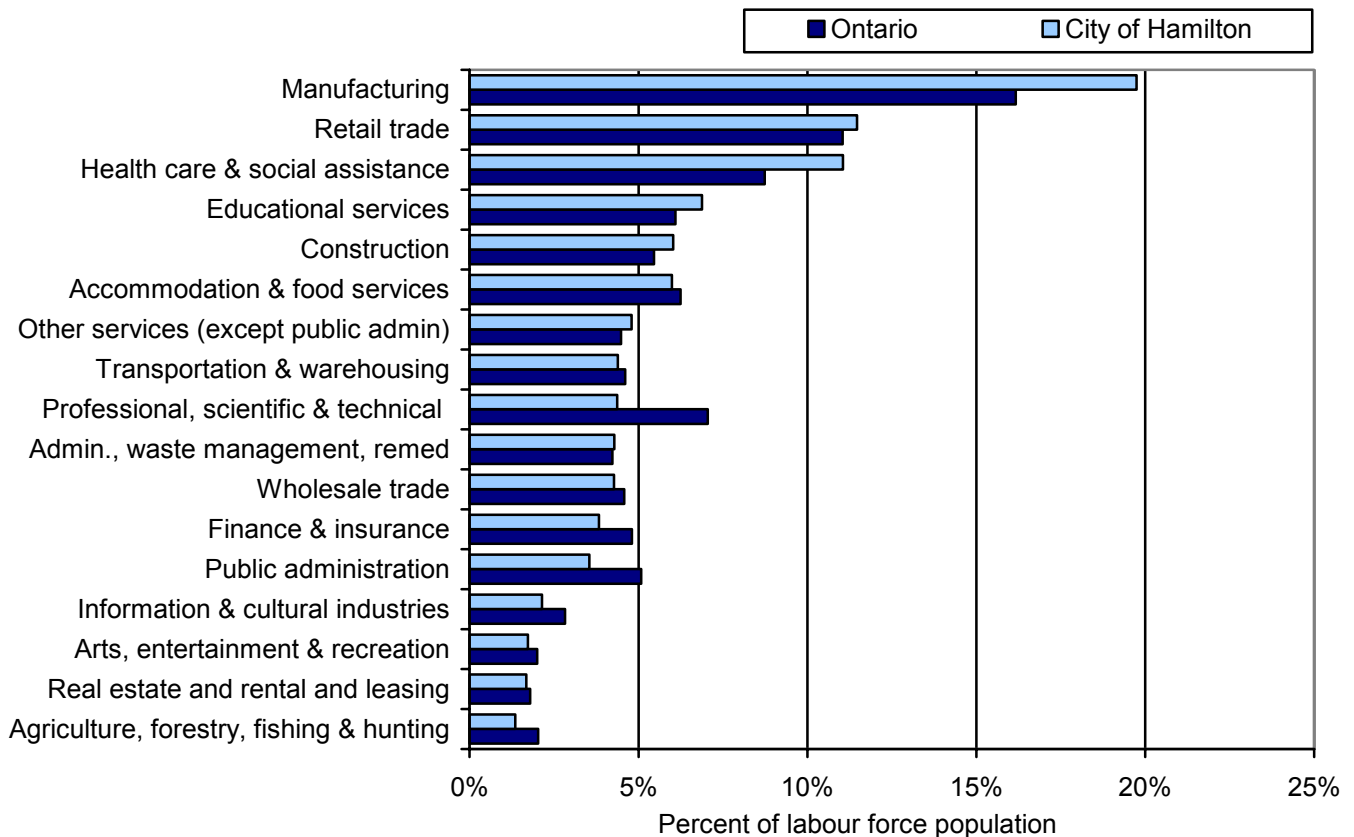
Source: Statistics Canada, Census 1996 and 2001



## LABOUR FORCE

- Description:**     ▪ The labour force population by various industries within the City of Hamilton and Ontario.
- Key Message:**    ▪ Employment in the City of Hamilton is strongly influenced by the manufacturing industry, as twenty percent of the City of Hamilton's population in 2001 was employed in this sector. Other sectors that employ more than 10% of the labour force are the retail trade and the health care/social assistance industries.
- With some exceptions, the overall distribution of employment in the various industries presented is similar in the City of Hamilton and Ontario.
  - Compared to Ontario, a larger proportion of the City of Hamilton's labour force works in manufacturing and health care and social services.
  - Compared to Ontario, a smaller proportion of the City of Hamilton's labour force is working in the professional, scientific, and technical services industries and public administration.

**Labour force population by industry, City of Hamilton and Ontario, 2001**



Industries that comprise less than 4% of the labour force population are not shown in the graph above.

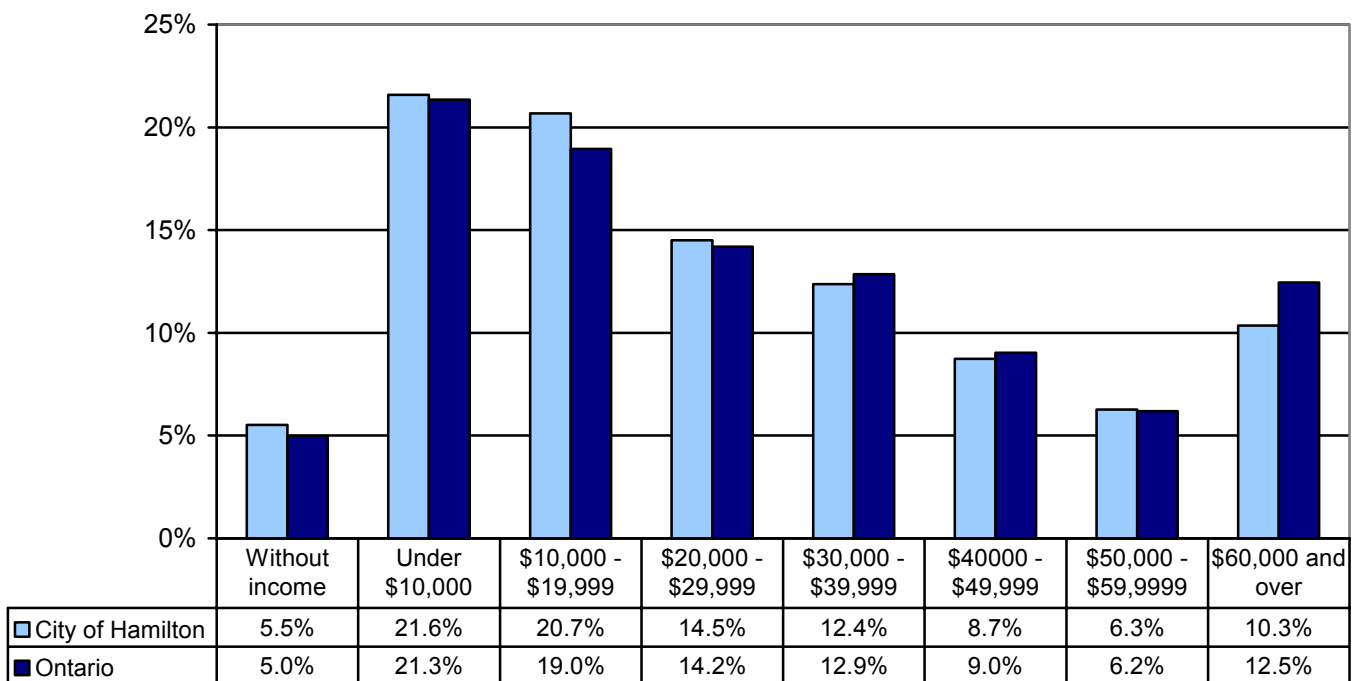
Source: Statistics Canada, Census 2001



## INCOME

- Description:**
- The total money income for individuals 15 years of age and older received during the calendar year 2000 from any source, expressed as a percentage of all persons 15 years of age.
- And
- Total income dollars received by Hamiltonians 15 years and over during calendar year 2000, broken down by source, and expressed as a percentage of the total.
  - Employment income refers to wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income.
  - Government transfers refers to all transfer payments received from federal, provincial or municipal governments including: the Old Age Security pension, Guaranteed Income Supplement, benefits from Canada or Quebec Pension Plan, Employment Insurance benefits, Canada Child Tax benefits, and other income from government sources.
  - Other income refers to regular cash income not reported in any of the sources listed on the questionnaire, including alimony, child support, periodic support from other persons not in the household, income from abroad (excluding dividends and interest), non-refundable scholarships and bursaries, severance pay and royalties.
- Key Message:**
- Compared to Ontario, a higher proportion of the population age 15 years and older in the City of Hamilton are without income or in the lower income categories.
  - There is a lower proportion of the population age 15 years and older that have annual income over \$60,000 in the City of Hamilton than in Ontario.

**Income of population age 15 years and older, City of Hamilton, and Ontario, 2000**



Source: Statistics Canada, Census 2001



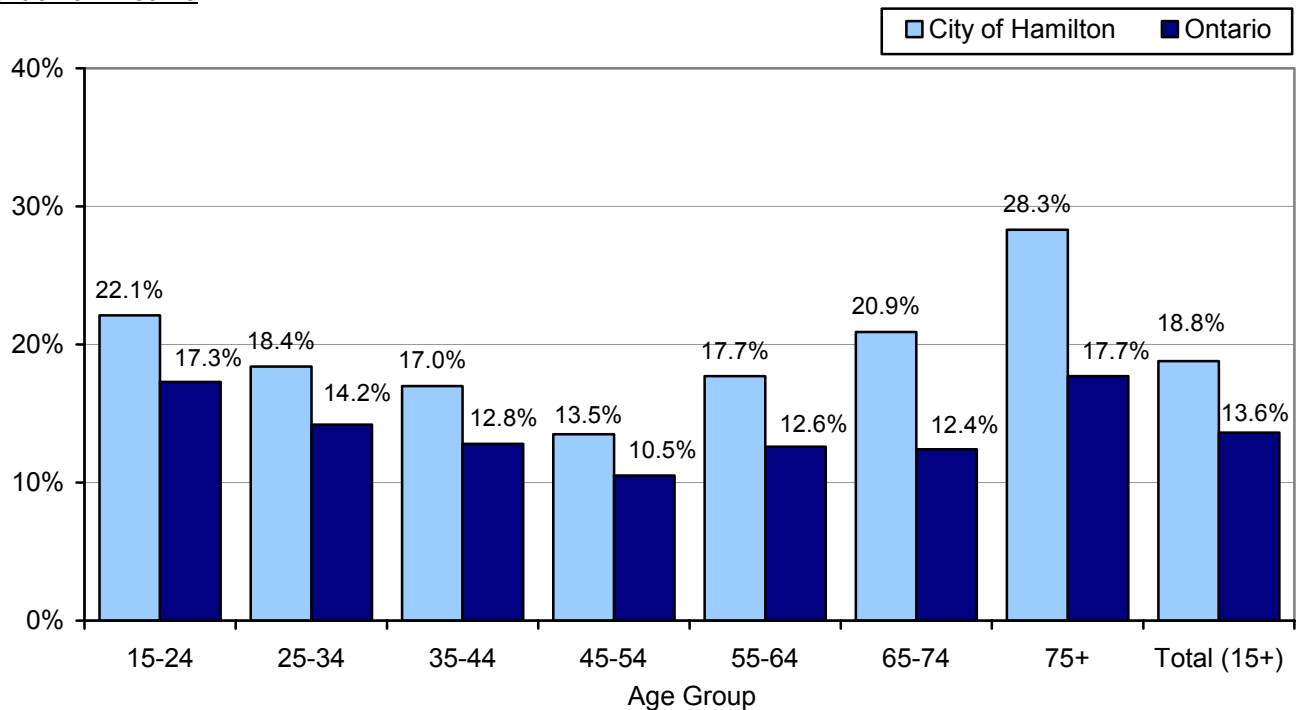
## LOW INCOME

- Description:**
- Population age 15 years of age and over in relation to Statistics Canada's low income cut-offs (LICOs).
  - Low Income Cut Off is the threshold to define low income used by Statistics Canada. Low Income Cut-offs are income levels at which households, families or unattached individuals spend at least 20% more than average on food, shelter and clothing. LICOs are based on size of family and the size of the city of residence.
  - LICOs are not a measure of poverty, rather, LICOs reflect a consistent and well-defined methodology that identifies those who are substantially worse-off than average.

- Key Message:**
- Compared to Ontario, a substantially higher proportion of the population in the City of Hamilton live below the low income cut-off (18.8% in the City of Hamilton vs. 13.6% in Ontario). This is true for all age groups, but is worse for those aged 75 years or older.

### **Incidence of low income among population 15 years of age and over by age group, City of Hamilton and Ontario, 2000**

Percent of low income



Source: Statistics Canada, Census 2001

- Limitations:**
- LICOs are calculated for census metropolitan areas and are based on the average living costs in these cities, thus they do not take into account differences in the cost of basic necessities between these cities (e.g. housing, food and transportation).
  - The data in the above graph shows incidence of low income in the City of Hamilton based on comparisons to the LICO derived by Statistics Canada for the Hamilton CMA which includes the City of Hamilton, Burlington and Grimsby.

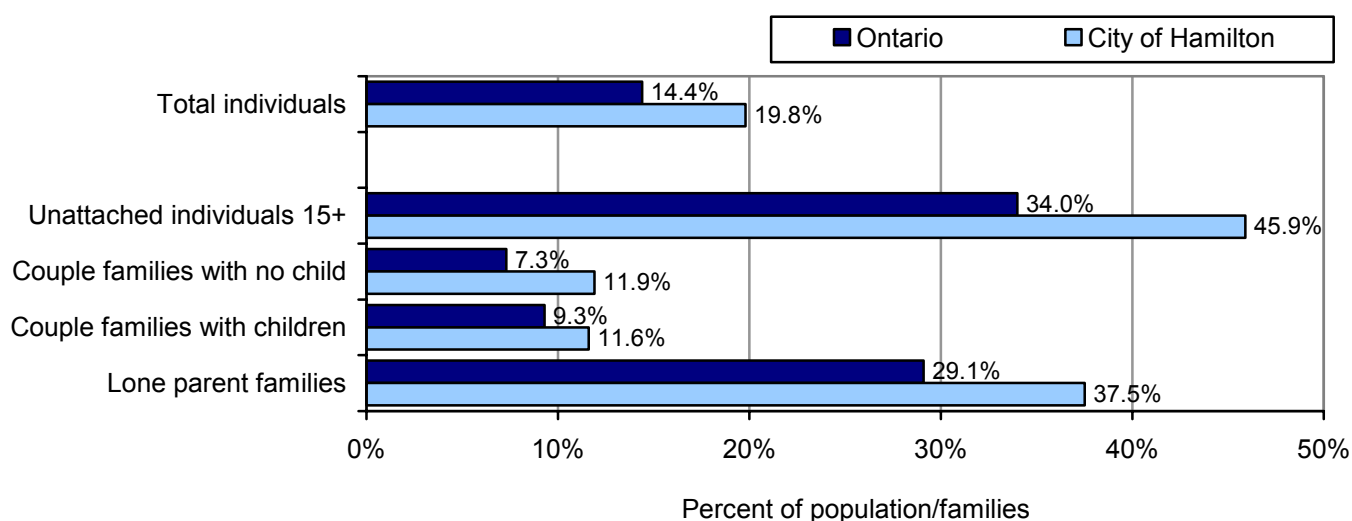


## LOW INCOME BY FAMILY TYPE

- Description:**
- Individuals and various family types (unattached individuals, couples with and without children, and lone parent families) with income below the low income cut-offs (LICOs).
  - Private household refers to a person or a group of persons (other than foreign residents) who occupy a private dwelling and do not have a usual place of residence elsewhere in Canada.
  - Low Income Cut Off is the threshold to define low income used by Statistics Canada. Low Income Cut-offs are income levels at which households, families or unattached individuals spend at least 20% more than average on food, shelter and clothing. LICOs are based on size of family and the size of the city of residence.
  - LICOs are not a measure of poverty, rather, LICOs reflect a consistent and well-defined methodology that identifies those who are substantially worse-off than average. Low income affects health-related purchases like nutritious foods, warm clothing, and safety or recreational equipment. It can also affect one's access to shelter and transportation. Income can influence health indirectly by its relationship to education, unemployment, type of employment, stress, self-esteem and power (the ability to exert control over the factors that influence a person's health and well-being).

- Key Message:**
- Almost twenty percent of the City of Hamilton population subsist on an income below the Low Income Cut-off thresholds. This is substantially higher than for Ontario as a whole.
  - For all family types, the City of Hamilton has a higher proportion below LICO than the province.
  - Almost half of the unattached individuals in the City of Hamilton have low income.
  - Lone parent families are over three times more likely to have low income than couple families.

### *Incidence of low income among individuals and select family types, City of Hamilton and Ontario, 2000*



Source: Statistics Canada, Census 2001

- Limitations:**
- LICOs are calculated for census metropolitan areas and are based on the average living costs in these cities, thus they do not take into account differences in the cost of basic necessities between these cities (e.g. housing, food and transportation).
  - The data in the above graph shows incidence of low income in the City of Hamilton based on comparisons to the LICO derived by Statistics Canada for the Hamilton CMA which includes the City of Hamilton, Burlington and Grimsby.

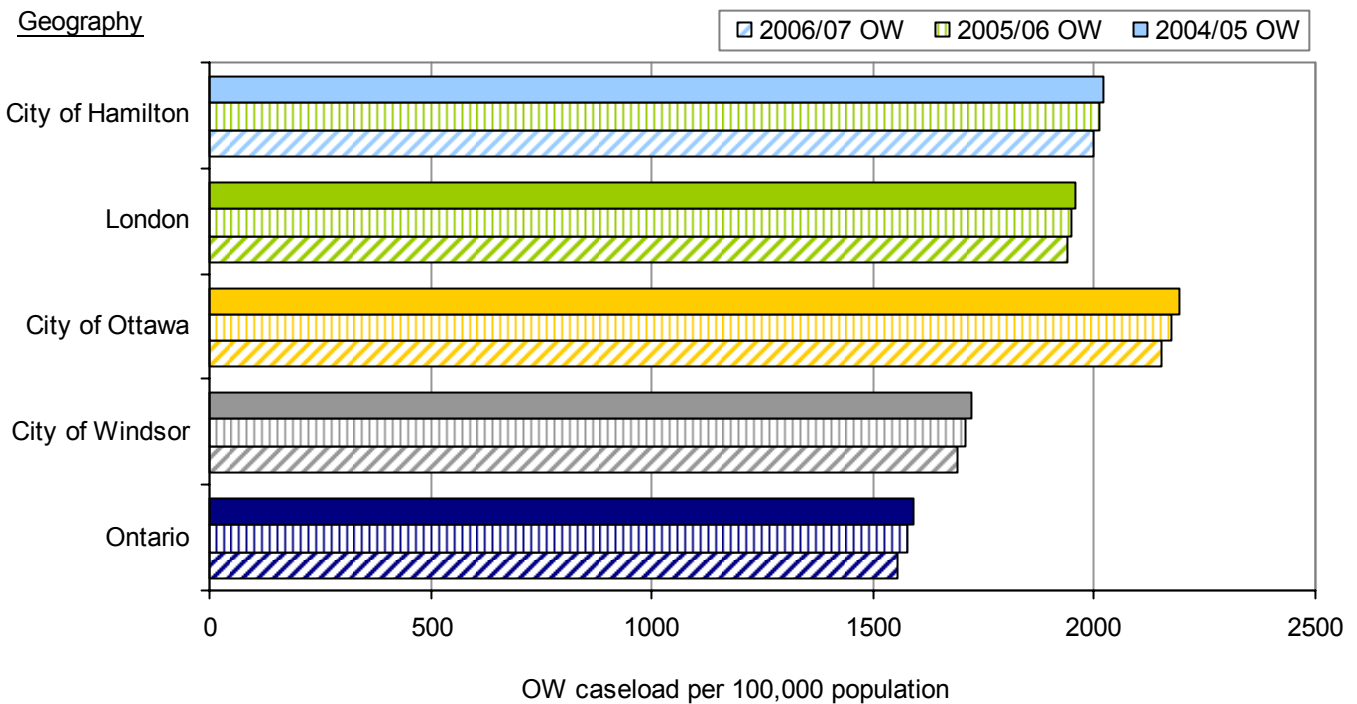


## ONTARIO WORKS (OW) RATES

- Description:**
- The actual average monthly Ontario Works (OW) caseload per 100,000 population for 2004/05 and the forecasted average monthly caseloads per 100,000 population for 2005/06 and 2006/07.
  - Cases refer to single individuals and family heads receiving social assistance. The average caseload per 100,000 population provides some indication of the caseload burden on municipalities of various sizes.

- Key Message:**
- In 2004/05, the actual average monthly Ontario Works (OW) caseload in Hamilton was 2020 cases per 100,000 population. This means that over 10,000 single individuals or family heads living in Hamilton received OW social assistance that year.
  - The actual average monthly OW caseload has consistently decreased since 2001 and is projected to continue decreasing until 2007.
  - In 2004/05, the actual average monthly OW caseload in Hamilton was significantly higher than the Ontario average.
  - The forecasted average monthly OW caseloads in Hamilton for 2005/06 and 2006/07 are significantly higher than those forecasted for Ontario

**Average monthly Ontario Works (OW) caseload per 100,000 population, actuals for 2004/05, forecasted for 2005/06 and 2006/07, select CMSMs and Ontario**



Source: Ontario Ministry of Community and Social Services Provincial Assistance Caseload Forecast 2005, Ministry of Finance Population Projections, 2004



## ONTARIO WORKS (OW) ADEQUACY

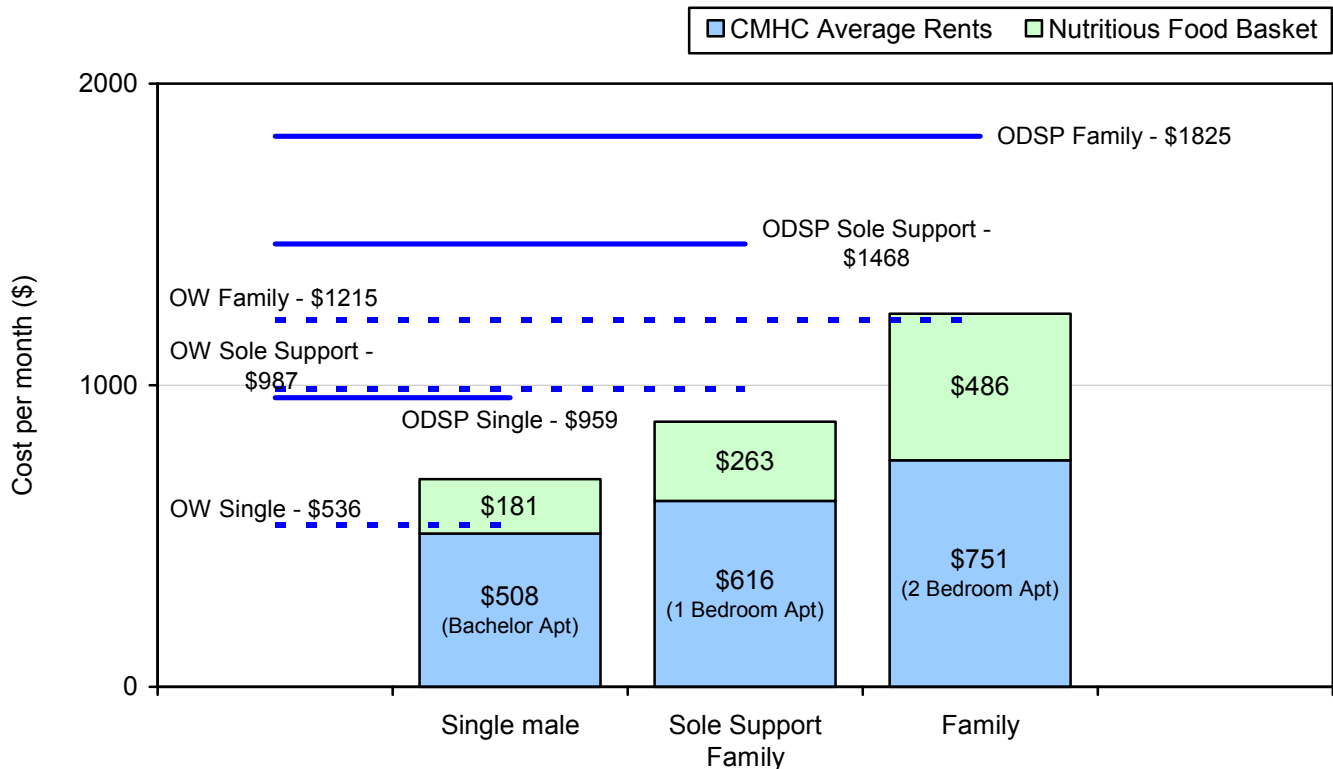
**Description:**

- A comparison of the average market rent and cost of a nutritious food basket for different family situations to the respective Ontario Works social assistance rate.
- It should be noted that average market rent and the Nutritious Food Basket reflect basic costs of food and shelter and do not include: necessities such as clothing, utilities, transportation, medication, or other personal items.

**Key Message:**

- The Ontario Works Single and Family maximum allowances do not adequately cover the costs of average rent and basic food costs for the respective family situations in the City of Hamilton.

### Social Assistance Rates compared to Hamilton Nutritious Food Basket Costs and Hamilton Average Rents



\*Single Male – Male (25-29)

\*Sole Support Family - Female (25-49), Boy (10-12)

\*Family – Man (25-49), Woman (25-49), Girl (10-12), Boy (7-9)

Source: Province of Ontario Ministry of Community and Social Services 2004, Canada Mortgage and Housing, 2004, City of Hamilton Public Health and Community Services 2003

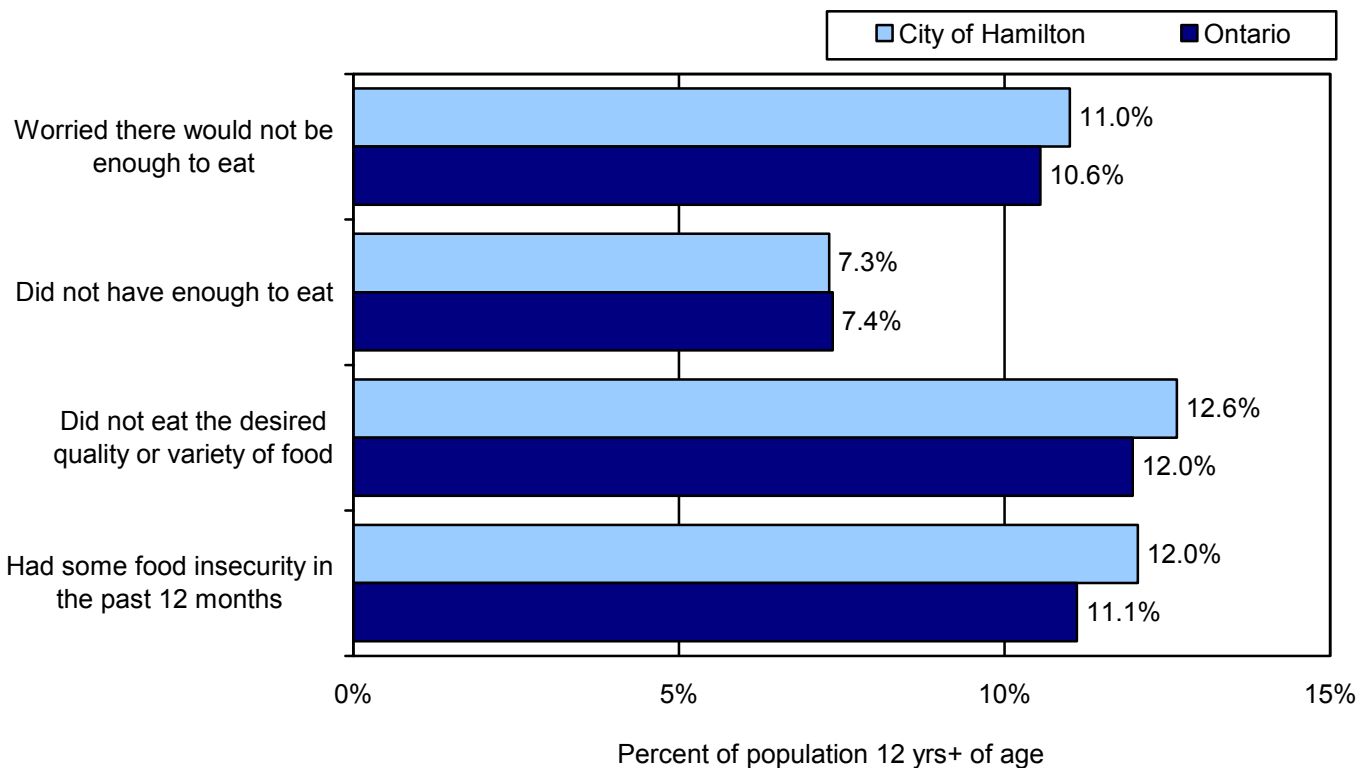


## FOOD SECURITY

- Description:**
- The proportion of the population who in the last 12 months, because of lack of money, worried that there would not be enough to eat, or didn't have enough food to eat, or didn't eat the quality or variety of foods that they wanted to eat.
  - Food Security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle.  
*Source: World Food Summit, 1996.*
  - A measure of food security is an important component of socio-economic status and provides information on health inequalities which strongly affects quality of life.

- Key Message:**
- Eleven percent of the population in the City of Hamilton 12 years of age and over worried that there would not be enough food to eat. Seven percent did not have enough to eat, thirteen percent did not eat the desired quality or variety of food, and twelve percent had reported some food insecurity in the past 12 months.
  - In general, the proportion of the population in the City of Hamilton who reported some indication of food insecurity exceeded the provincial proportion.

**Population 12 years and over who worried that there would not be enough to eat or didn't eat the quality or variety of foods that they wanted to eat in the past 12 months, City of Hamilton and Ontario, 2000/01**



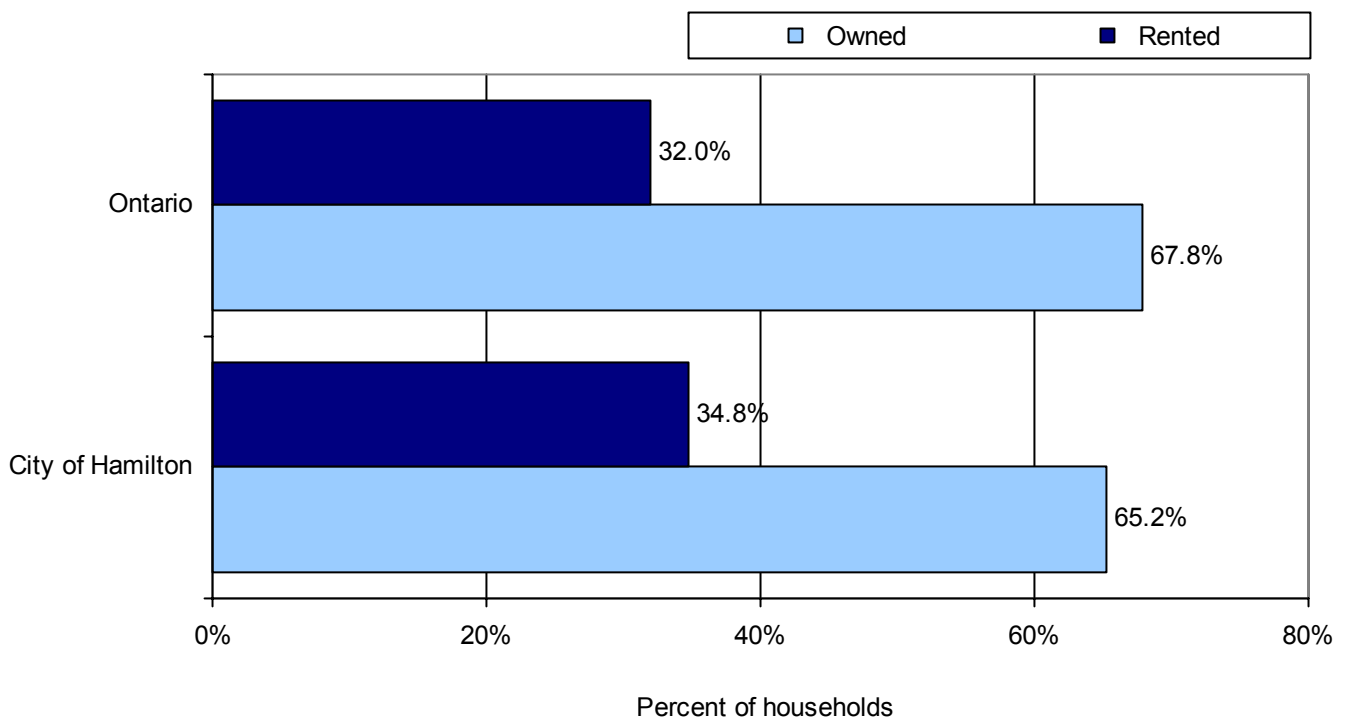
Source: Statistics Canada, Canadian Community Health Survey (CCHS) 1.1, 2000/01



## OWNERSHIP OF PLACE OF RESIDENCE

- Description:**
- Households who own or rent the property in which they reside.
  - Home ownership can be associated with quality of life and health status as it is often a marker for self-esteem, a sense of security and stable income.
  - Knowing the proportion of renters can be useful in planning and priority setting for housing related programs.
- Key Message:**
- In the City of Hamilton, significantly more households own their housing property than rent their housing property.
  - The proportion of households in the City of Hamilton with rental housing is slightly higher than the provincial proportion

**Households by ownership of housing property, City of Hamilton and Ontario, 2001**



Source: Statistics Canada, Census 2001

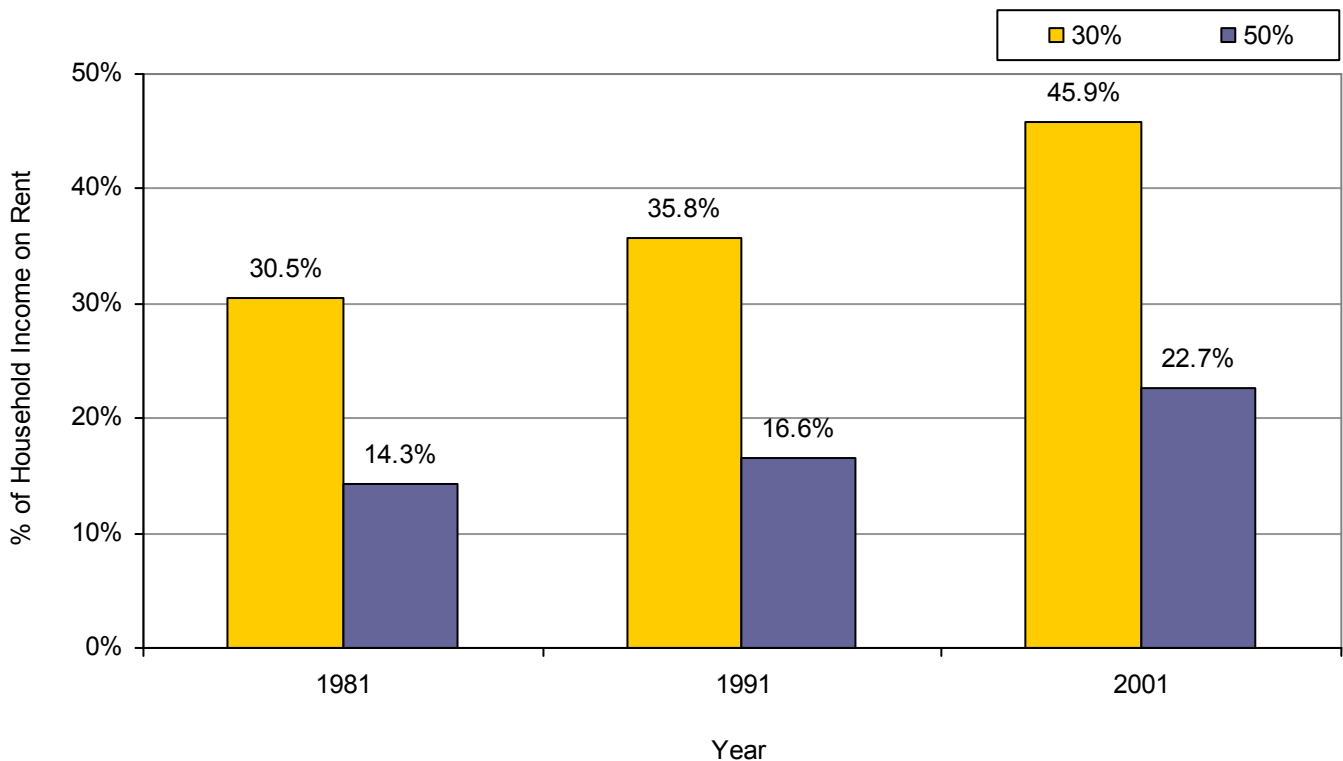


## HOUSING AFFORDABILITY

- Description:**
- Households in the City of Hamilton spending 30% or more of their total household income on rental expenses.
  - Households that are experiencing affordability problems are said to be in 'core housing need,' which is defined by the Canadian Mortgage and Housing Corporation (CMHC) as a household in which "housing falls below at least one of the adequacy, suitability or affordability standards and it would have to spend 30% or more of its income to pay the average market rent or alternative local market housings that meets all three standards" (*Keys to the Home, 2004, p22*).
  - Affordable housing in the City of Hamilton, particularly in the rental market, is a key concern for maintaining a healthy and productive workforce.

- Key Message:**
- In 2001, almost 46% of households that rent housing in the City of Hamilton spent more than 30% of their total household income on rent. Twenty-three percent (22.7%) of households that rent housing in the City of Hamilton spent more than 50% of their total household income on rent.
  - The proportion of households in the City of Hamilton that spend more than 30% of their household income on rent increased from 30.5% in 1981 to 45.9% in 2001.
  - Similarly, the percentage of households in the City of Hamilton that spend more than 50% of their household income on rent consistently increased over the past two decades.

**Renter households that spend more than 30% and more than 50% of total household income on rent, Former City of Hamilton, 1981, 1991 and 2001**



Source: Statistics Canada, Census 1981, 1991 and 2001

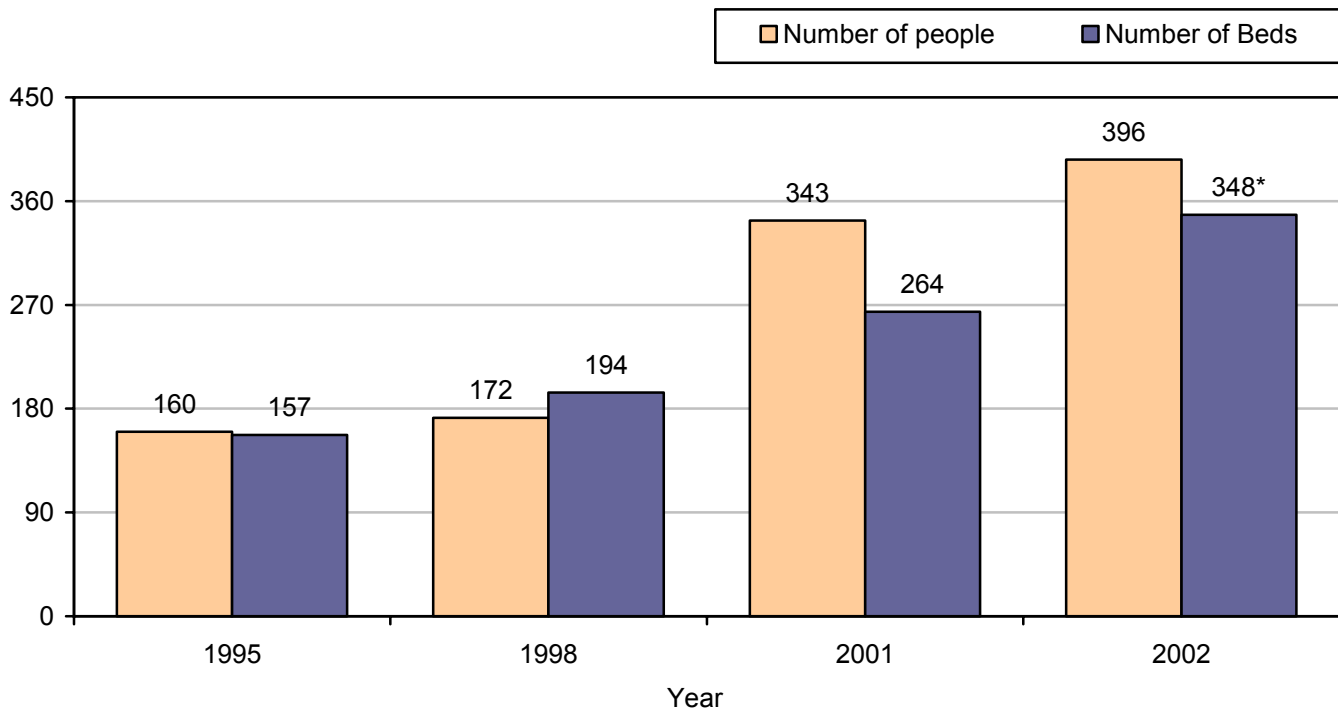


## HOMELESSNESS - SHELTER OCCUPANCY

- Description:**
- The number of people accessing emergency shelters and permanent beds available on a given night in November in The City of Hamilton.
  - Surveys were conducted on weeknights near the end of the month (when resources may be running short, and when people were more likely to need emergency shelter).
  - Surveys were completed in 12 emergency shelters that serve a variety of populations including men, women, youth, and families.

- Key Message:**
- The number of people accessing emergency shelters on a given night has dramatically increased since 1995.
  - Unpublished figures since 2002 suggest that the numbers of people accessing emergency shelters appear to be stabilizing. This is particularly true in the men's emergency shelter system where preliminary numbers seem to indicate a slight decrease in the numbers.
  - People who are homeless or have low income have increased risk of illness and premature death.
  - It is difficult to provide exact measures of homelessness. While some people who are experiencing homelessness are included in service utilization figures, many others are on the street or "hidden."

**Number of people accessing emergency shelters and permanent beds available on a given night in November, City of Hamilton, 1995, 1998, 2000 and 2001**



\*On the night of the SPRC Survey, Inasmuch House had 8 fewer beds due to construction. The total number of beds available generally is 356.

Source: Report on Homelessness in Hamilton 2003, Social Planning and Research Council (SPRC), May 2003



## 6.0 GENERAL HEALTH

This section provides an overview of aspects related to the general health of the population of the City of Hamilton. It includes indicators such as self rated health status, life expectancy and mortality rates. This section also provides information related to the social environment of the City of Hamilton which may impact on the quality of life such as crime rate and commuting.

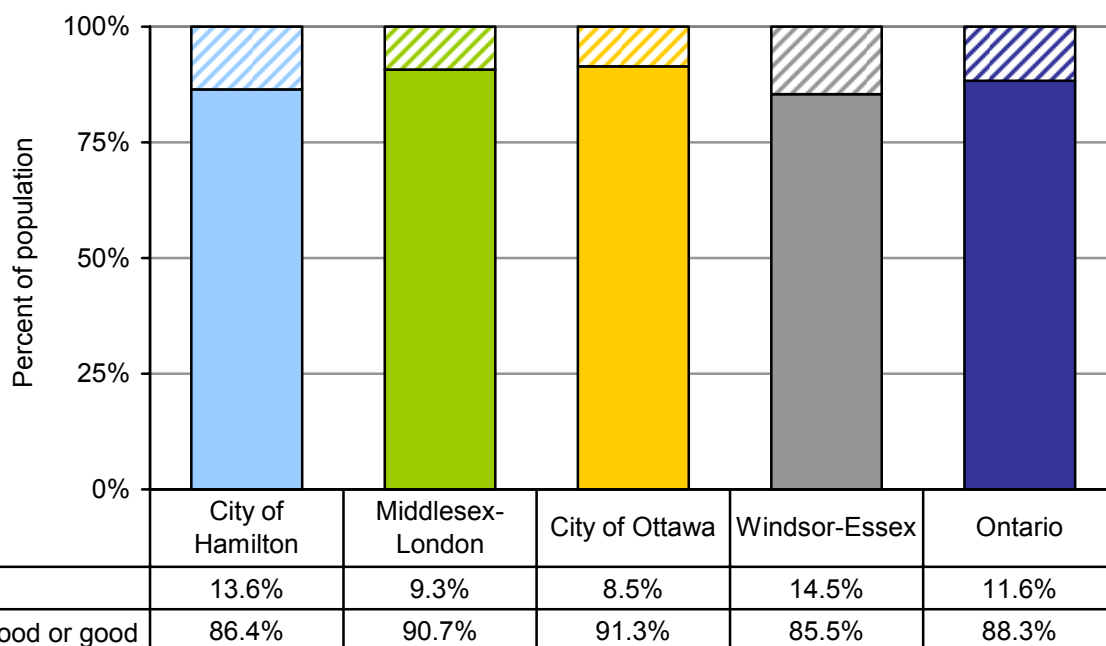


## SELF-REPORTED HEALTH STATUS— PEER COMPARATORS

- Description:**
- Population 12 years of age and older by how they rate their own health; as excellent/very good/good or fair/poor.
  - Self-rated health status is a well known indicator of population health that is strongly correlated with health care utilization.  
*Source: Idler EL, Benyamini (1997). Self-rated health and mortality: a review of twenty-seven community studies. Journal of Health and Social Behavior 38(1): 21-37.*
  - This information can be used to help predict the future burden of care and monitor past social, economic, and environmental initiatives targeted at improving the health of the population in the City of Hamilton.

- Key Message:**
- Among the population in the City of Hamilton, 13.6% reported their health as fair or poor, which was higher than that for Ontario.
  - Twenty-two percent of the population in the City of Hamilton reported their health as excellent, which is higher than the proportion seen among Ontario's population.
  - The percentage of the population that rated their health as fair or poor in the City of Hamilton is considerably higher than in London and Ottawa.

**Population who report their health-status to be excellent/very good/good or fair/poor, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003



## POTENTIAL YEARS OF LIFE LOST – PEER COMPARATORS

**Description:**

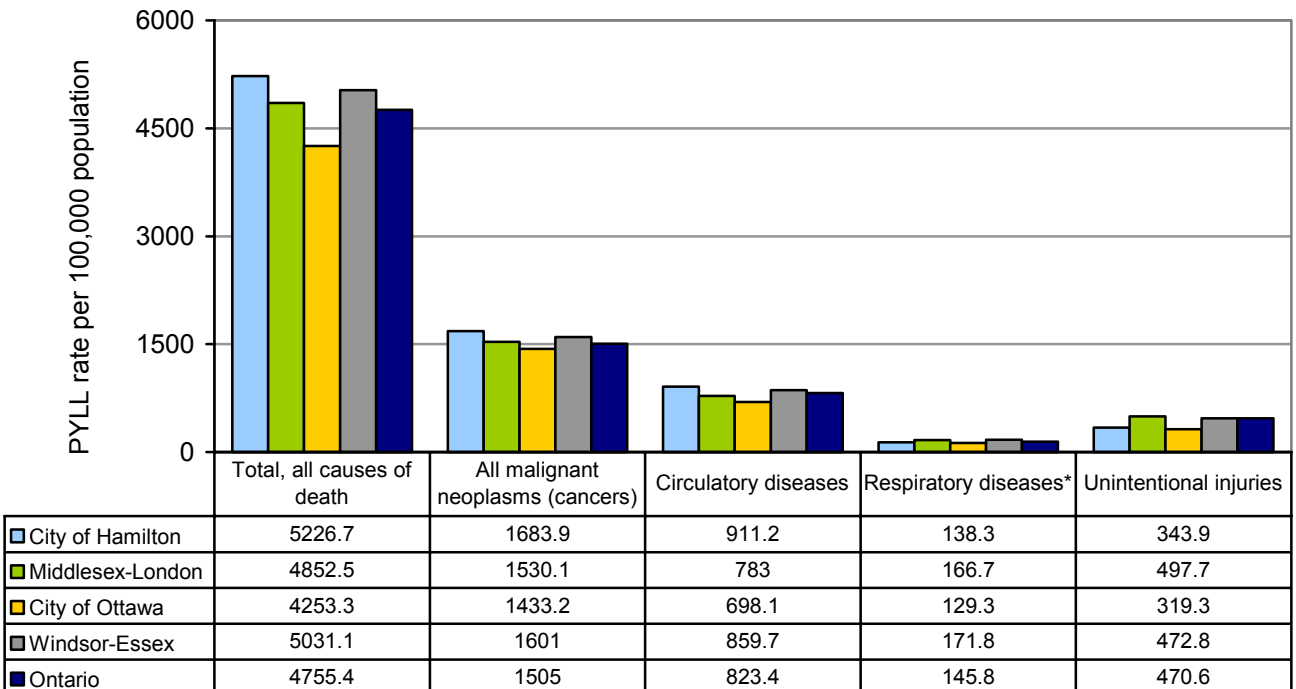
- Potential years of life lost (PYLL) is the number of years of potential life not lived when a person dies "prematurely", defined for this indicator as before age 75.
- PYLL is a measure of the relative impact of various diseases and lethal forces on society. PYLL highlights the loss to society as a result of youthful or early deaths.

*Source: Last, John M. (2001). A Dictionary of Epidemiology: Fourth Edition. New York: Oxford University Press.*

**Key Message:**

- The total potential years of life lost was higher in the City of Hamilton than in Middlesex-London, Ottawa, Windsor-Essex and Ontario. This means that in the City of Hamilton, more people are dying prematurely than in the select comparison cities.
- PYLL due to cancers and circulatory diseases were higher in the City of Hamilton than the select comparison cities.

**Potential years of life lost (PYLL), by selected causes of death, population aged 0 to 74, three-year average, City of Hamilton, select cities and Ontario, 2001**



\*Respiratory diseases does not include infectious and parasitic diseases

*Source: Statistics Canada, Canadian Vital Statistics, Death Database, and Demography Division (population estimates), 2001*

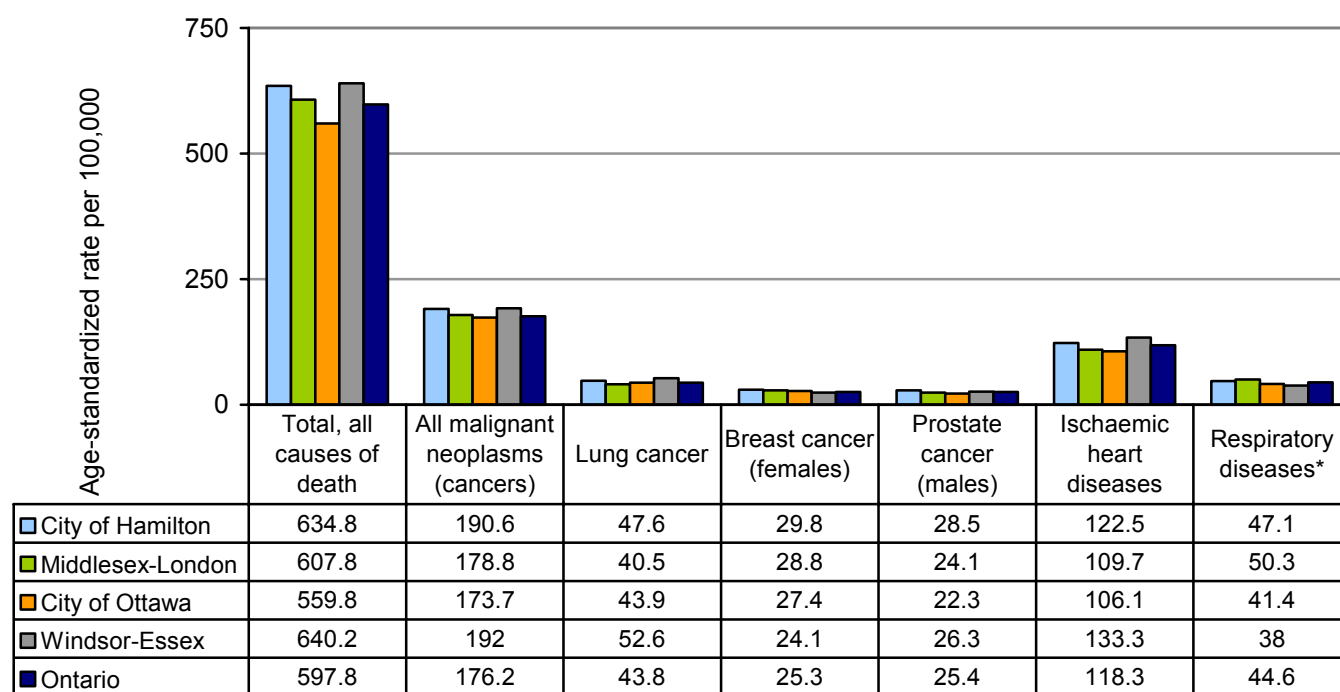


## MORTALITY – PEER COMPARATORS

- Description:**
- The three year average age-standardized mortality rates of select causes of death. A mortality rate of a select cause of death is an estimate of the portion of a population that dies from the select cause during a specified time period.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - The cause of death is taken from the primary cause of death on the death certificate, co-morbidity factors are not considered.
  - Can be used to measure long-term success in reducing deaths due to leading causes. Lower death rates can indicate success in disease/injury prevention, detection, and treatment.
  - Useful for comparing overall burden of particular diseases in a given population therefore useful in determining service priorities and identifying health objectives

- Key Message:**
- The total mortality rate was higher in the City of Hamilton than in Ontario.
  - Mortality rates for all malignant neoplasms (cancers), lung cancer, breast cancer, prostate cancer, circulatory and respiratory diseases were higher in the City of Hamilton than in Ontario
  - Mortality rates of female breast cancer and male prostate cancer was highest in the City of Hamilton compared to the select comparison cities and Ontario.

**Age standardized mortality rates of select causes of death, three-year average, City of Hamilton, select cities and Ontario, 2001**



\*Respiratory diseases does not include infectious & parasitic diseases

Source: Statistics Canada, CANSIM Database, 2001

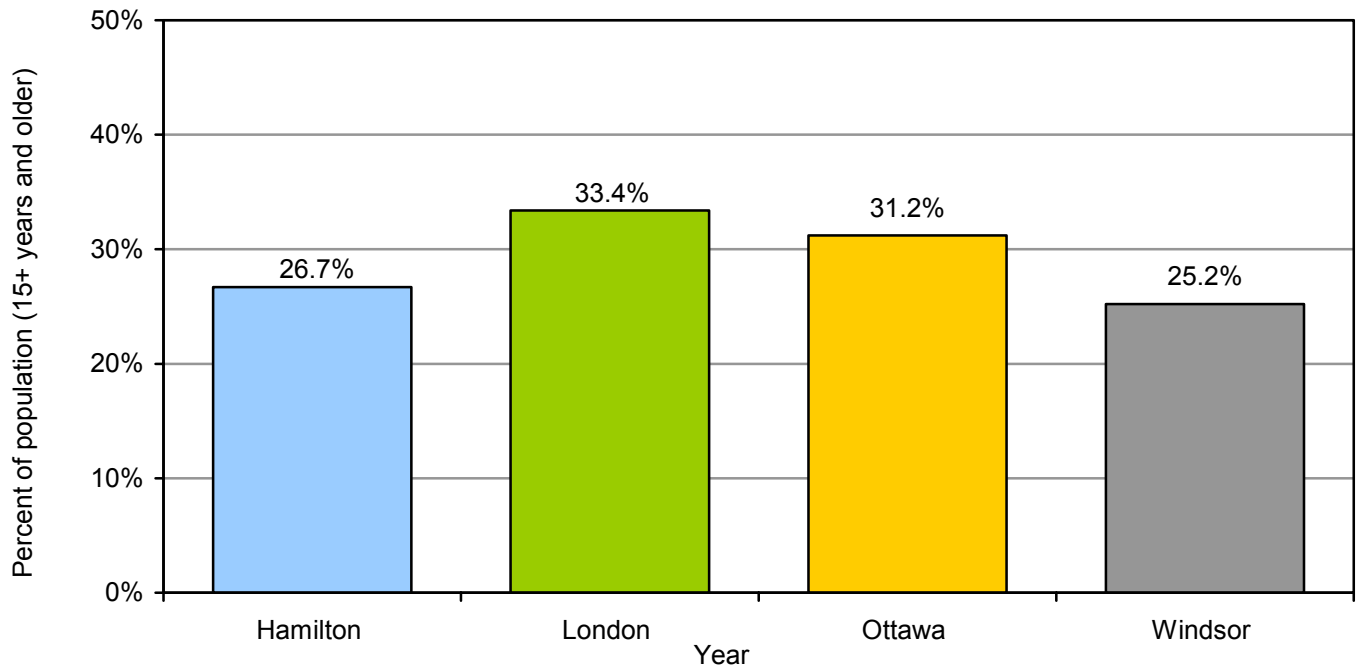


## VOLUNTEERISM – PEER COMPARATORS

- Description:**
- The population aged 15 years and older who do volunteer work.
  - Volunteerism is an essential component in building the community.
  - Volunteerism is an indicator for social engagement, which in turn is a determinant of health and wellness.

- Key Message:**
- The proportion of the population in the City of Hamilton who do volunteer work is lower than London and Ottawa.

**Population 15 years of age and older who do volunteer work, City of Hamilton and select cities, 2000**



Source: Statistics Canada, National Survey of Giving, Volunteering & Participating, 2000



## BARRIERS TO ACCESSING HEALTH CARE SERVICES

**Description:**

- The population 12 years of age and older who felt they had unmet health care needs, and the reasons why they felt they did not receive health care.
- Data is based on self-reported experiences and perceptions.

**Key Message:**

- The proportion of the population who felt they had unmet health care needs was higher in the City of Hamilton than in Ontario.
- The top reasons of why health care needs was not met include long waiting times and unavailability of health care at the time required.

***Population 12 years of age and older who needed health care but felt they didn't receive it and the top 10 reasons why they felt health care was not received, City of Hamilton and Ontario, 2003***

	Hamilton	Ontario
Percent of population age 12 and older who needed health care but felt they didn't receive it	11.4%	10.5%
Reasons for not receiving health care		
Wait too long	32.2%	29.7%
Not available at time required	16.8%	17.8%
Felt would be inadequate	11.3%	9.3%
Not available in the area	10.7%	12.9%
Decided not seek care	8.6%	8.5%
Didn't get around to it	8.2%	9.2%
Cost	8.1%	9.5%
Doctor didn't think it was necessary.	7.8%	6.1%
Didn't know where to go	3.7%	4.7%
Too busy	3.7%	6.5%

*Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003*



## ACCESS TO HEALTH CARE SERVICES – PEER COMPARATORS

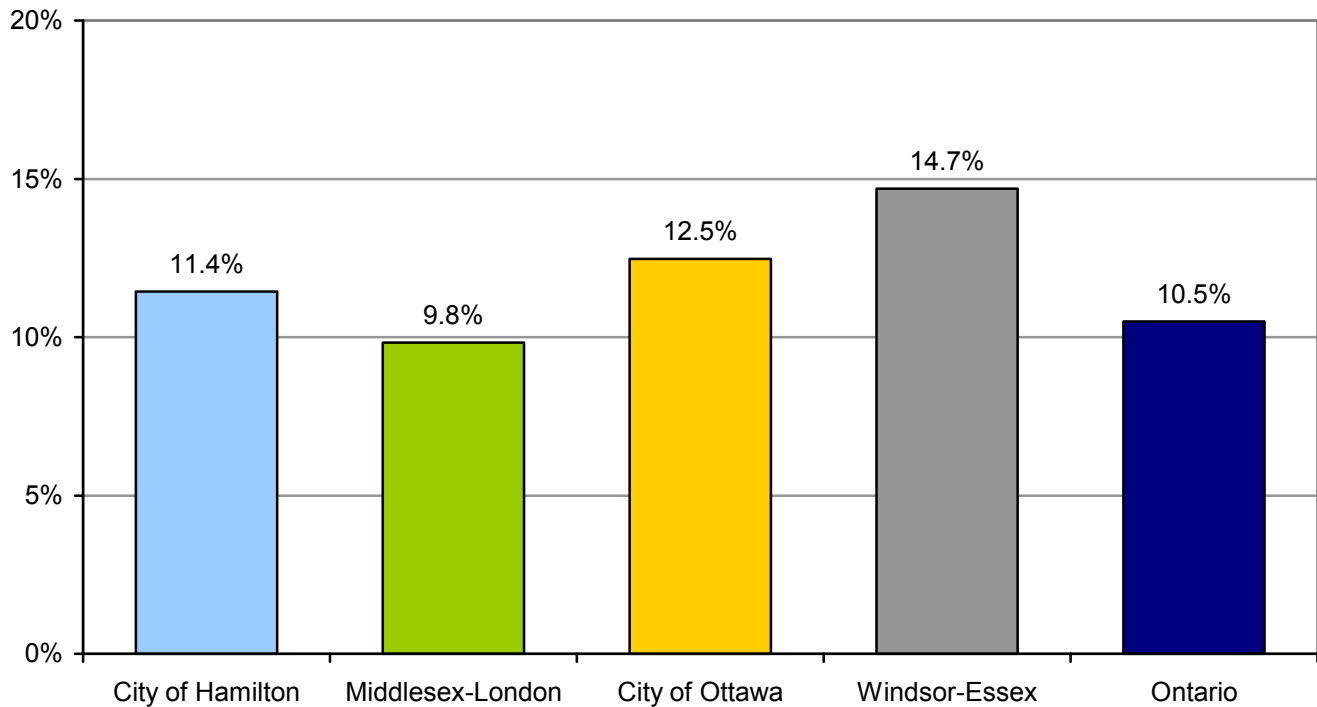
**Description:**

- Population 12 years of age and older who feel they have unmet health care needs.
- Data is based on self-reported experiences and perceptions.

**Key Message:**

- A higher proportion of the population in the City of Hamilton (11.4%) felt they have unmet health care needs compared to proportions in Middlesex-London and Ontario.

**Population 12 years of age and older who needed health care but felt they didn't receive it, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003

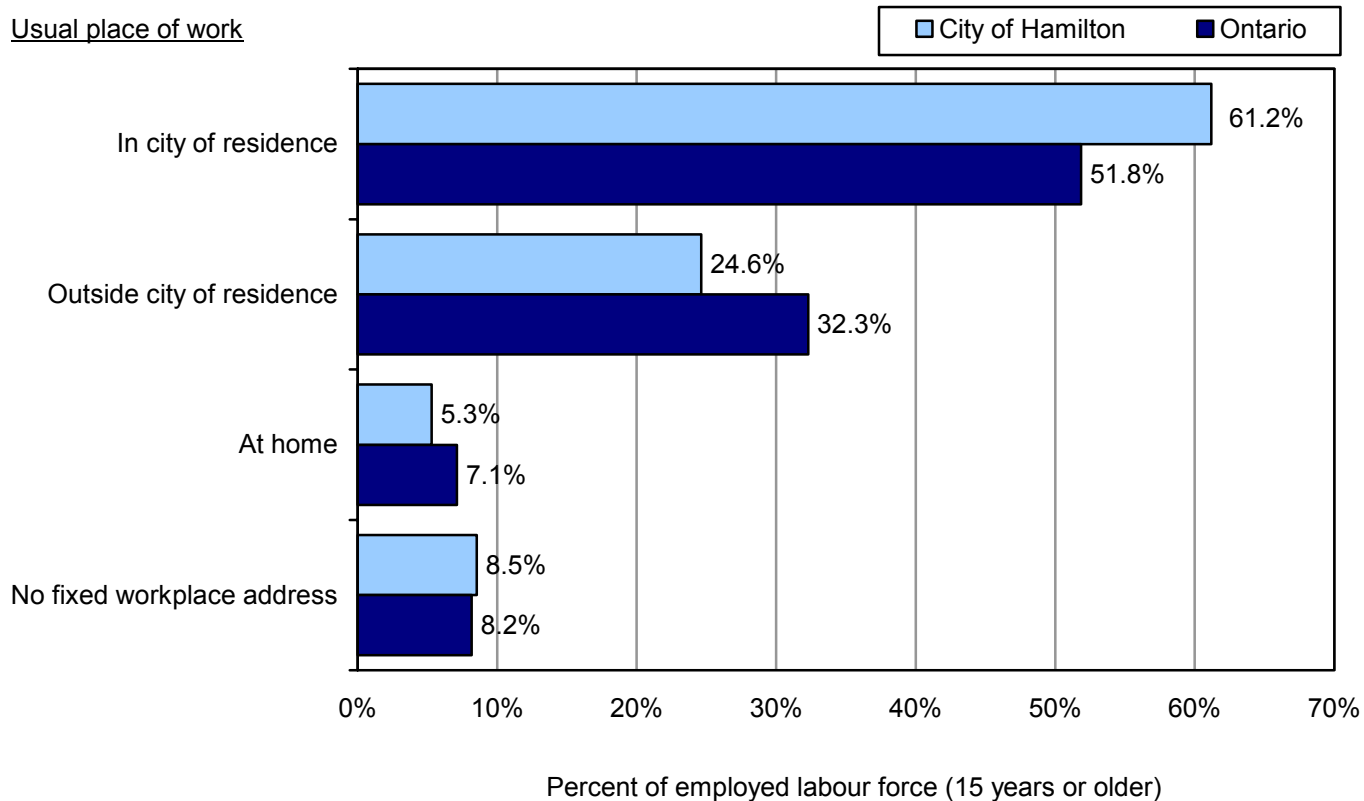


## COMMUTING POPULATION

- Description:**
- The employed labour force population 15 years of age and older whose usual place of work is within their city of residence and the percentage whose usual place of work is outside their city of residence.
  - An indication of job availability within the city compared to outside of the city.
  - Long commutes to work can cause stress and fatigue and hence affect quality of life.
  - A useful indicator for planning service delivery to the City of Hamilton population (e.g., availability of programming outside of work hours).

- Key Message:**
- Sixty-one percent of the City of Hamilton's employed population work within the city boundaries, whereas a quarter of the employed population commutes out of the city boundaries to work.
  - The proportion of commuters in the City of Hamilton is less than the provincial proportion (24.6% versus 32.3% respectively).

***Employed labour force 15 years of age and older by usual place of work, City of Hamilton and Ontario, 2001***



Source: Statistics Canada, Census 2001



## CRIME

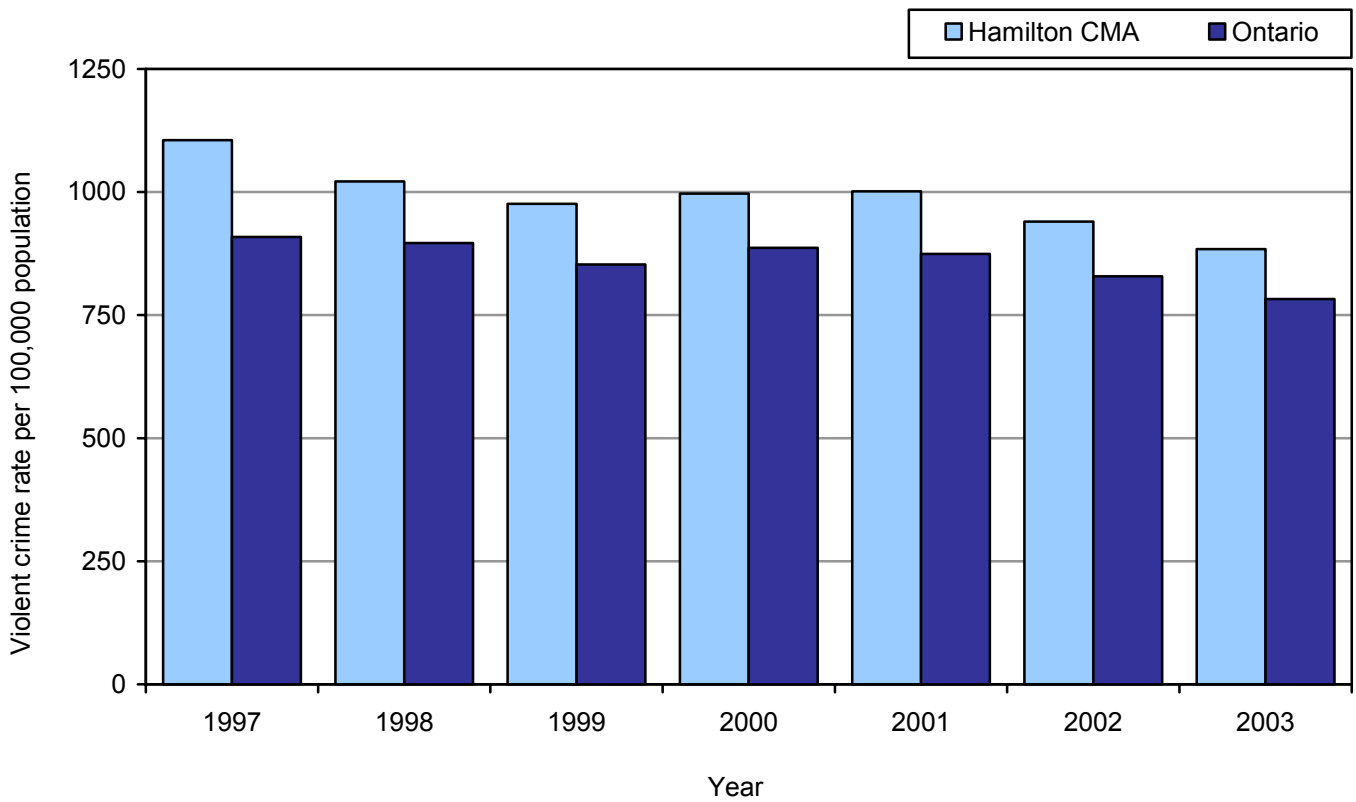
**Description:**

- The number of violent crime offences reported to police for every 100,000 persons.
- Violent crime offences include: homicide, attempted murder, assaults, other assaults, sexual assaults, other sexual offences, abduction, and robbery.
- A quality of life indicator of public safety and security in the community.

**Key Message:**

- The violent crime offences rate in the Hamilton Census Metropolitan Area (CMA) has declined since 1997. However, the rate in the Hamilton CMA has been consistently higher than in Ontario.

***Violent crime offences reported to police (rate per 100,000 persons), Hamilton Census Metropolitan Area (CMA) and Ontario, 1997-2003***



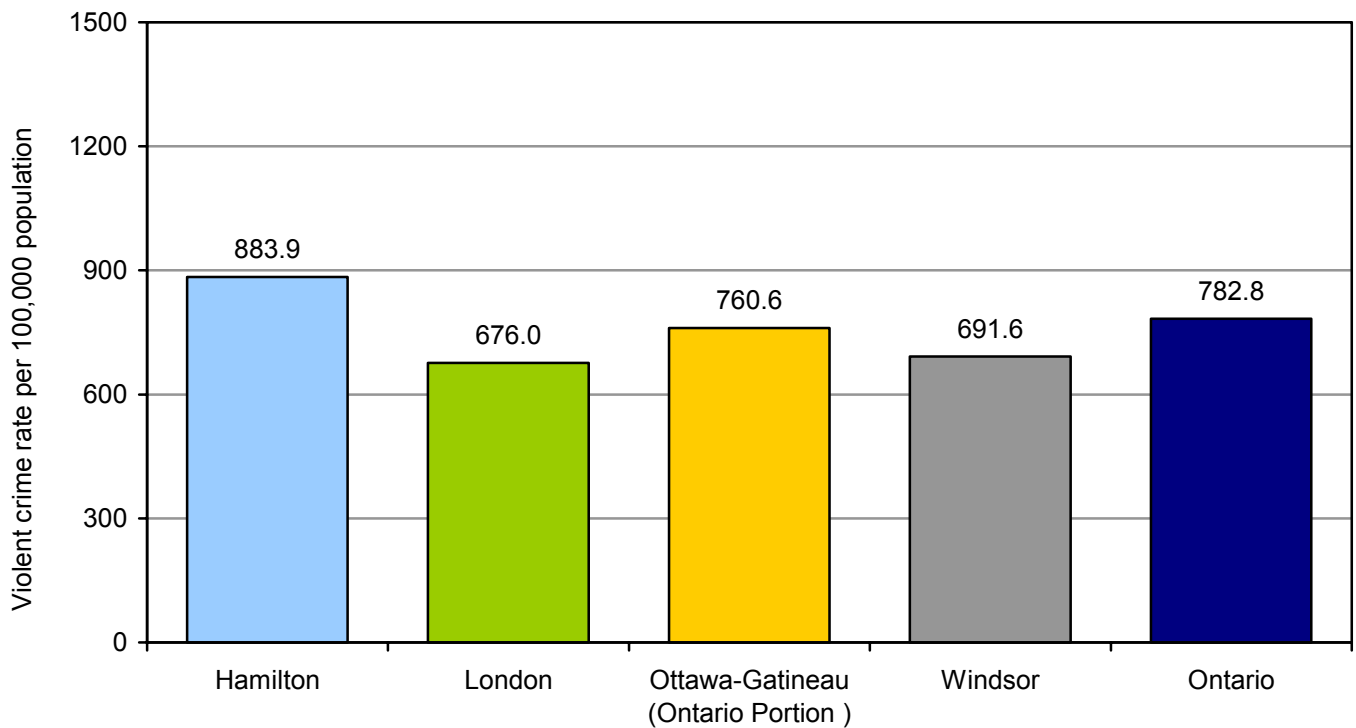
*Source: Uniform Crime Reporting Survey, Canadian Centre for Justice Statistics, Statistics Canada, 1997-2003*



## CRIME – PEER COMPARATORS

- Description:**
- The number of violent crime offences reported to police for every 100,000 persons.
  - Violent crime offences include: homicide, attempted murder, assaults, other assaults, sexual assaults, other sexual offences, abduction, and robbery.
  - A quality of life indicator of public safety and security in the community.
- Key Message:**
- The violent crime rate was higher in the census metropolitan area (CMA) of Hamilton than the other select CMAs and Ontario.

***Violent crime offences reported to police (rate per 100,000 persons), Census Metropolitan Areas of Hamilton, London, Ottawa-Gatineau (Ontario portion), Windsor and Ontario, 2003***



Source: Statistics Canada, Uniform Crime Reporting Survey, Canadian Centre for Justice Statistics, 2003



## 7.0 CHRONIC CONDITIONS, HEALTHY LIFESTYLES AND INJURY PREVENTION

This section presents indicators which include long term risk behaviours or conditions which have an impact upon healthy lifestyles and injury prevention.

The information presented in this section incorporates broad and local information on health behaviours and incidence rates associated with chronic conditions, healthy lifestyles and injury prevention. This section examines health risk factors including prevention and early detection of cancer (cancer screening), mental health, healthy eating, healthy body weights, physical activity, substance use and alcohol consumption, rates of injury, tobacco-free living and oral health.

It is important to recognize the inter-related nature of these factors and their resulting impact on health outcomes. For instance, healthy eating and physical activity act through healthy body weights as a significant factor in the prevention of childhood and adult obesity. Among youth, factors such as stress, depression, increased alcohol consumption, and substance use are inter-related and collectively or individually increase risk of injury and premature death.

Health is influenced by broad social determinants, such as age, gender, socio-economic status, and cultural diversity. The ability to make healthy choices, and in turn reduce health risk behaviours, can directly or indirectly contribute to more positive population health outcomes in terms of both improved quality of life and decreased economic burden on the health care system.

To achieve more favourable health outcomes a variety of population health strategies are used. Broad and local public health programming include mass media, policy development, creating environmental supports, education and awareness initiatives, and advocating for healthy public policy. More targeted approaches directed toward “at-risk” or “high-risk” individuals in multiple settings need to be developed and implemented. All of these programs and approaches should work together to encourage, establish and sustain healthy environments that would support healthy lifestyle choices.

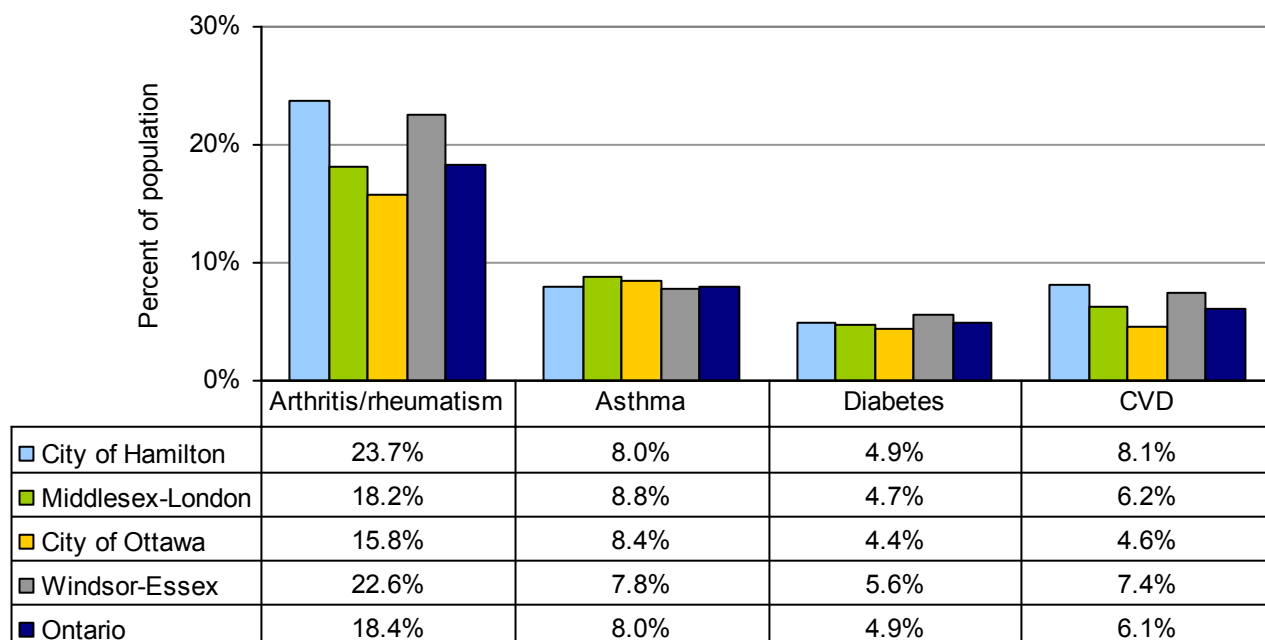


## CHRONIC CONDITIONS – PEER COMPARATORS

- Description:**
- Age-standardized prevalence of selected chronic conditions
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Cardiovascular disease (CVD) includes ischemic heart disease and stroke. It is a leading cause of death for both sexes in the City of Hamilton and Ontario.
  - Diabetes Mellitus is a chronic debilitating health condition that continues to grow as a public health problem in Canada.
  - Arthritis is a leading chronic degenerative condition which causes pain, impaired physical function and disability creating a notable burden on population health and impacting on overall quality-of-life.
  - Asthma is a chronic respiratory disease that impacts on both health and daily functioning

- Key Message:**
- The proportion of the population in the City of Hamilton with arthritis/rheumatism or cardiovascular disease is significantly higher than the proportions reported in Middlesex-London, the City of Ottawa, and Windsor-Essex.
  - The proportion of the population in the City of Hamilton with asthma is significantly higher than the proportion in Windsor-Essex, but significantly lower than the proportions in Middlesex-London and the City of Ottawa.
  - The proportion of the population in the City of Hamilton with diabetes is significantly higher than that of Middlesex-London and the City of Ottawa, but significantly lower than that of Windsor-Essex.

**Age-Standardized Prevalence of Chronic Conditions in the City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1 (2003)

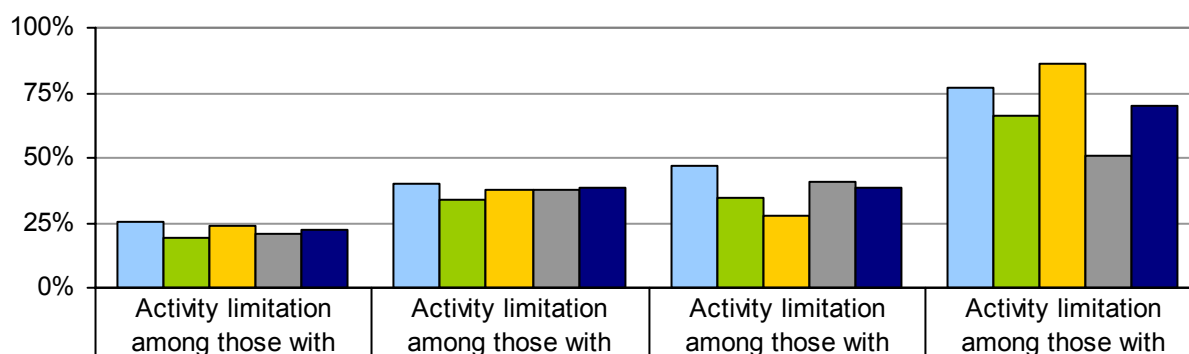


## SELF-REPORTED ACTIVITY LIMITATIONS – PEER COMPARATORS

- Description:**
- Population age 12 years and over requiring help with at least one activity of daily living.
  - Activities of daily living are activities related to personal care and include bathing, showering, dressing, getting in or out of bed or a chair, using the toilet and eating.
  - Identifies populations that may have a greater need for health services.
  - An outcome indicator of the impact of long-term health conditions and quality of life.
  - People with cardiovascular disease, diabetes, asthma, or arthritis are significantly more likely to report needing assistance with at least one activity of daily living or personal care, than individuals not having a chronic condition.

- Key Message:**
- Almost 80% of the population in the City of Hamilton age 12 years and older who suffer from the effects of a stroke have at least one activity limitation that impacts on their quality of life. This percentage is significantly greater than the Ontario proportion of 70%.
  - The proportion of the population in the City of Hamilton who have at least one activity limitation and diabetes is significantly greater than the Ontario proportion. In contrast, the proportion of the population in the City of Hamilton with at least one activity limitation and heart disease is significantly below the Ontario proportion.
  - Twenty six percent of the population in the City of Hamilton who suffer from asthma have at least one activity limitation. This proportion is significantly higher than that of Ontario (22.2%).
  - The City of Hamilton has a higher proportion of individuals who suffer from at least one activity limitation and also either diabetes, arthritis, and/or asthma compared with Middlesex-London, the City of Ottawa, and Windsor-Essex.
  - The proportion of the population in the City of Hamilton who suffers from the effects of a stroke and has at least one activity limitation is significantly lower than that reported in the City of Ottawa and significantly lower than that reported in Middlesex-London and Windsor-Essex.

### Activity limitation among populations with select chronic disease conditions, City of Hamilton, select cities and Ontario, 2003



	Activity limitation among those with stroke	Activity limitation among those with diabetes	Activity limitation among those with heart disease	Activity limitation among those with asthma
City of Hamilton	25.5%	39.9%	47.2%	77.3%
Middlesex-London	19.0%	33.9%	34.9%	66.0%
City of Ottawa	23.7%	37.7%	27.7%	85.9%
Windsor-Essex	20.9%	37.7%	40.8%	50.8%
Ontario	22.2%	38.6%	38.5%	70.0%

Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003

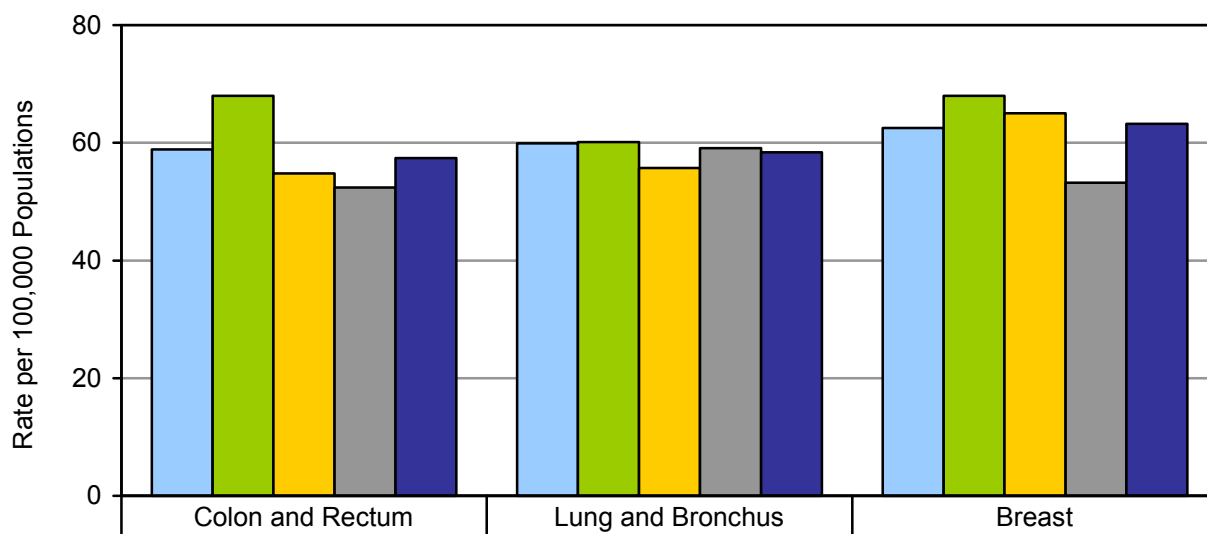


## CANCER INCIDENCE – PEER COMPARATORS

- Description:**
- The number of new cases of cancer reported in 2002, by cancer site.
  - Cancer is primarily a disease of older Canadians. Among men, 75% of new cancer cases and 82% of deaths due to cancer occur among those who are at least 60 years of age. Among women, 63% of new cases and 78% of cancer deaths occur among those who are at least 60 years of age.
  - In 2004, the most frequently diagnosed cancers in Canada were prostate cancer for men and breast cancer for women.
  - Lung cancer remains the number one cause of cancer death in both sexes.

- Key Message:**
- In the City of Hamilton, the incidence of lung cancer and bronchial carcinoma is similar to the incidence rate of Ontario: 60 per 100,000 population in the City of Hamilton versus 58 per 100,000 population in Ontario.
  - The incidence of prostate cancer in the City of Hamilton is significantly lower than that of Ontario (57 per 100,000 population versus 67 per 100,000 population).
  - The rate of colon and rectum cancer in the City of Hamilton is comparable to that of the Ottawa-Carleton and Windsor-Essex, and significantly lower than the rate in Middlesex-London.
  - The rates of lung cancer/bronchial carcinoma and breast cancer in the City of Hamilton are comparable to those of each of the select comparator cities.

**Cancer Incidence Rates by Select Cancer Sites, City of Hamilton, select cities and Ontario, 2002**



	Colon and Rectum	Lung and Bronchus	Breast
City of Hamilton	58.9	59.9	62.5
Middlesex-London	68	60.1	68
Ottawa-Carleton	54.8	55.7	65
Windsor-Essex	52.4	59.1	53.2
Ontario	57.4	58.4	63.2

Source: Cancer Care Ontario, 2002

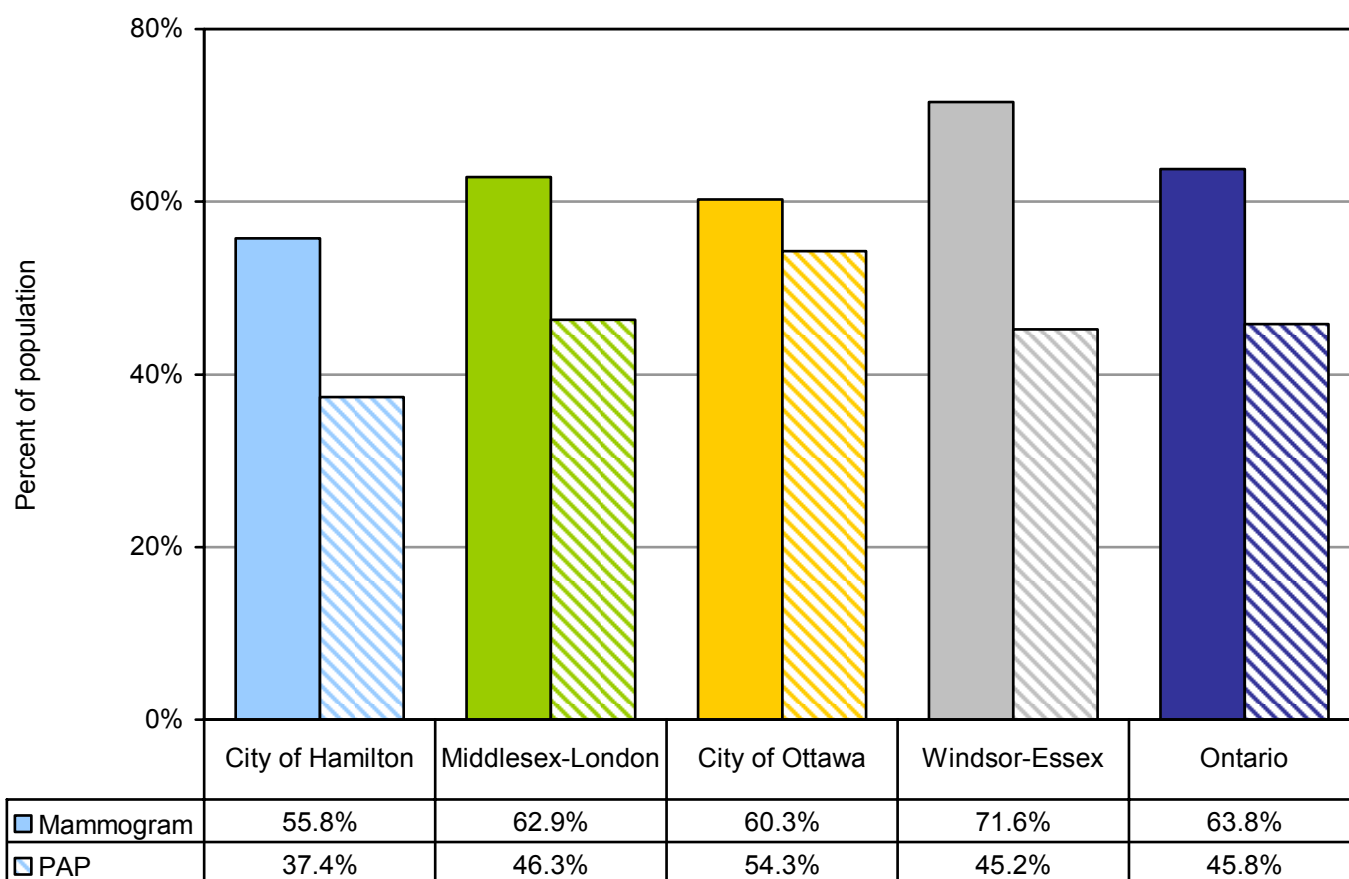


## USE OF CANCER SCREENING SERVICES – PEER COMPARATORS

- Description:**
- Females age 18 years and over who have had a Pap smear test in the past 12 months that checks for infection, abnormal cells, or cancer.
  - Females age 35 years and over who have ever had a mammogram.
  - Use of PAP smears tests and mammograms have been shown to reduce mortality from cervical cancer and breast cancer.

- Key Message:**
- During the past 12 months, 37% of the female population in the City of Hamilton age 18 years and over had a Pap smear test, compared with 46% of females of the same age group in Ontario.
  - The proportion of females in the City of Hamilton age 35 years and older who have had at least one mammogram is significantly less than that of Ontario (56% versus 64% respectively).
  - The proportion of the female population in the City of Hamilton age 35 years and over who have had a mammogram is comparable to the proportions in the City of Ottawa and Middlesex-London.
  - The City of Hamilton has the lowest proportion of females age 18 years and over who have had a Pap smear test in the past year.

**Use of screening services such as PAP smear testing and mammograms, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003



## LEADING CAUSES OF HOSPITALIZATIONS DUE TO INJURY – PEER COMPARATORS

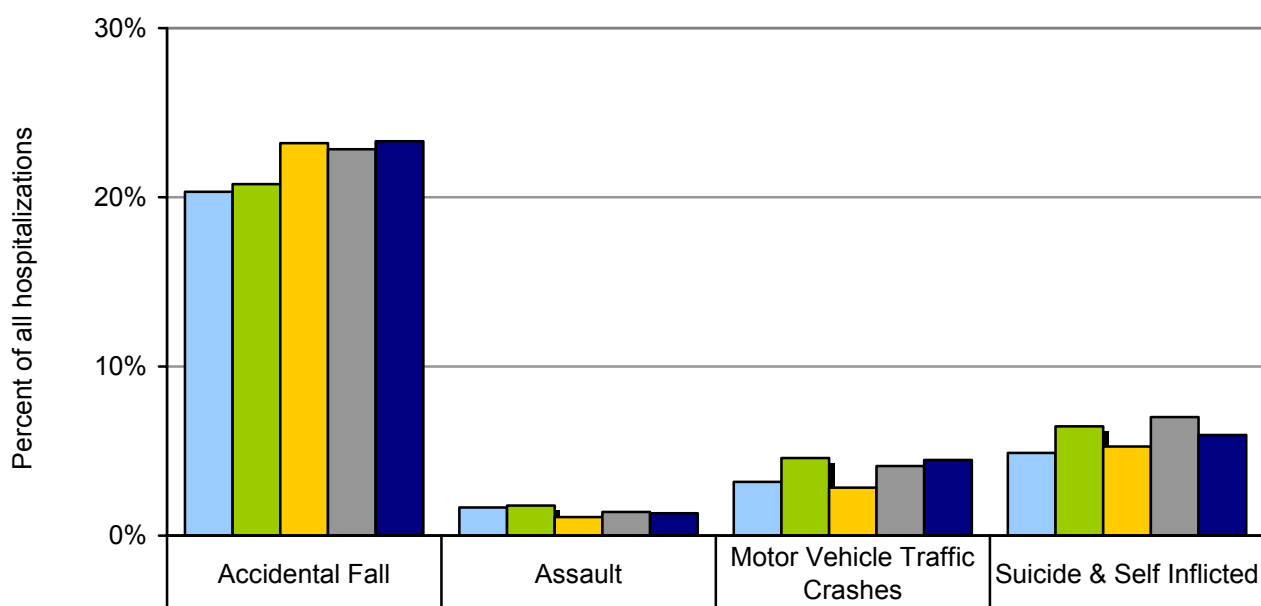
**Description:**

- Hospital separations due to select injury types. Hospital separations include formal admissions to acute care facilities for the purpose of an overnight stay or a day procedure. They also include separations due to death, discharge home, or transfer to another facility.
- The impact of injury is immense in terms of morbidity, mortality, personal costs and economic costs.
- The incidence and severity of injury can be reduced by intervention as most injuries are preventable. Many injuries due to falls can be reduced by

**Key Message:**

- Almost 25% of all hospital-related injuries are due to accidental falls in the province of Ontario.
- Hospitalization rates due to accidental falls are comparable between the City of Hamilton and the select comparator cities.
- Hospitalization rates due to suicide and self-inflicted injuries in the City of Hamilton are lower than rates in the select comparator cities and Ontario.
- Over three percent of all injury-related hospitalizations in the City of Hamilton are due to motor vehicle traffic crashes.

**Hospitalizations due to select injury related causes, City of Hamilton, select cities and Ontario, 2003**



	Accidental Fall	Assault	Motor Vehicle Traffic Crashes	Suicide & Self Inflicted
City of Hamilton	20.3%	1.7%	3.2%	4.9%
Middlesex-London	20.8%	1.8%	4.6%	6.5%
Ottawa	23.2%	1.1%	2.8%	5.3%
Windsor-Essex	22.8%	1.4%	4.1%	7.0%
Ontario	23.3%	1.3%	4.5%	6.0%

Source: Provincial Health Planning Database (PHPDB), 2003

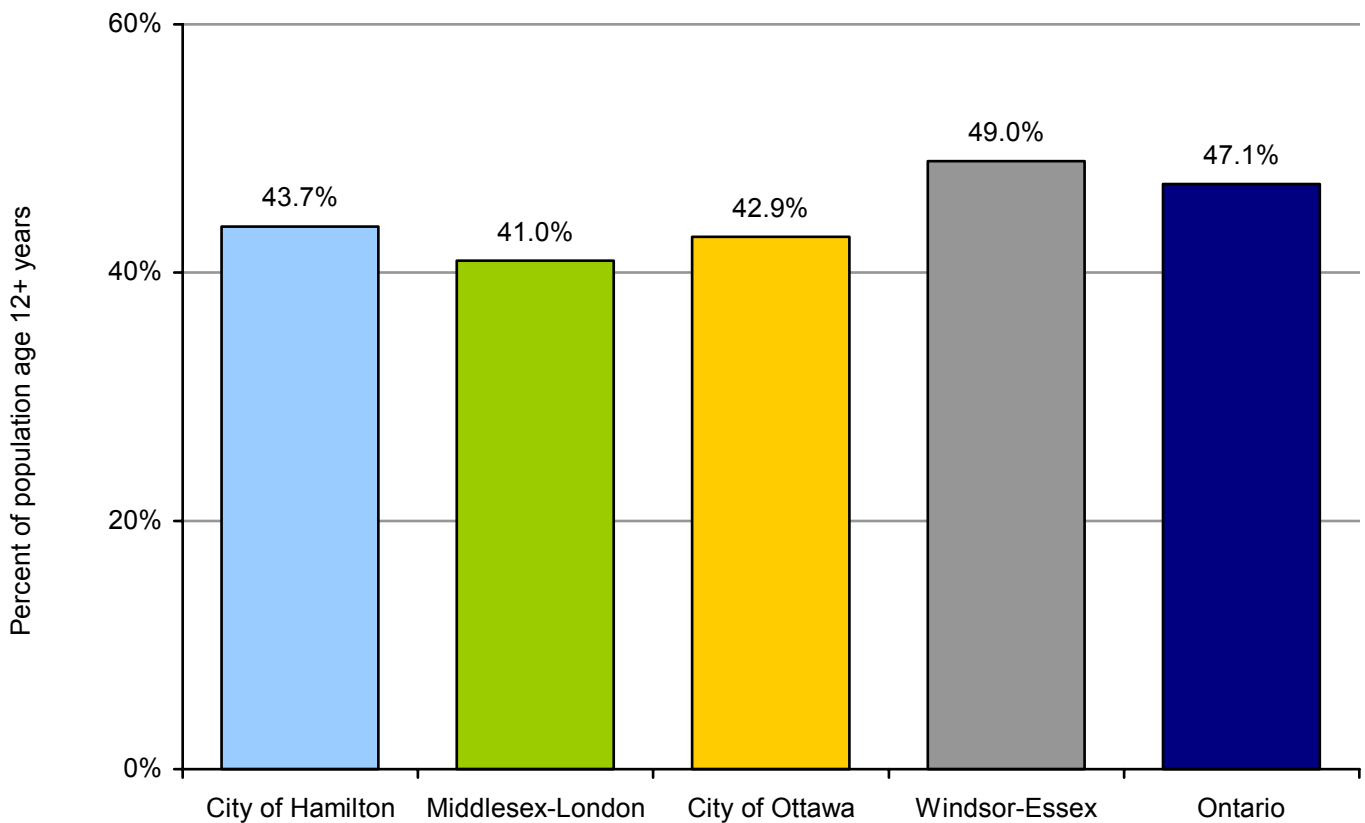


## PHYSICAL ACTIVITY – PEER COMPARATORS

- Description:**
- Population age 12 years and over classified as physically inactive based on an index of average daily physical activities.
  - Regular physical activity is associated with well-being and reduces the risk of many chronic conditions, in addition to helping achieve and maintain a healthy weight. Being overweight is a significant risk factor for type 2 diabetes, heart disease, hypertension, and stroke.
  - Levels of physical activity in the community are affected by how we design, build, and sustain our environment. A higher proportion of the physically active population may reflect a wider range of opportunities for physical activities available in the city.

- Key Message:**
- Forty-four percent of the population in the City of Hamilton age 12 years and older reported that they are physically inactive.
  - The proportion of the population in the City of Hamilton who are physically inactive is significantly higher than that of Middlesex-London and Ottawa, and significantly lower than that of Windsor-Essex.

**Population age 12 year and older who are physically inactive, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003

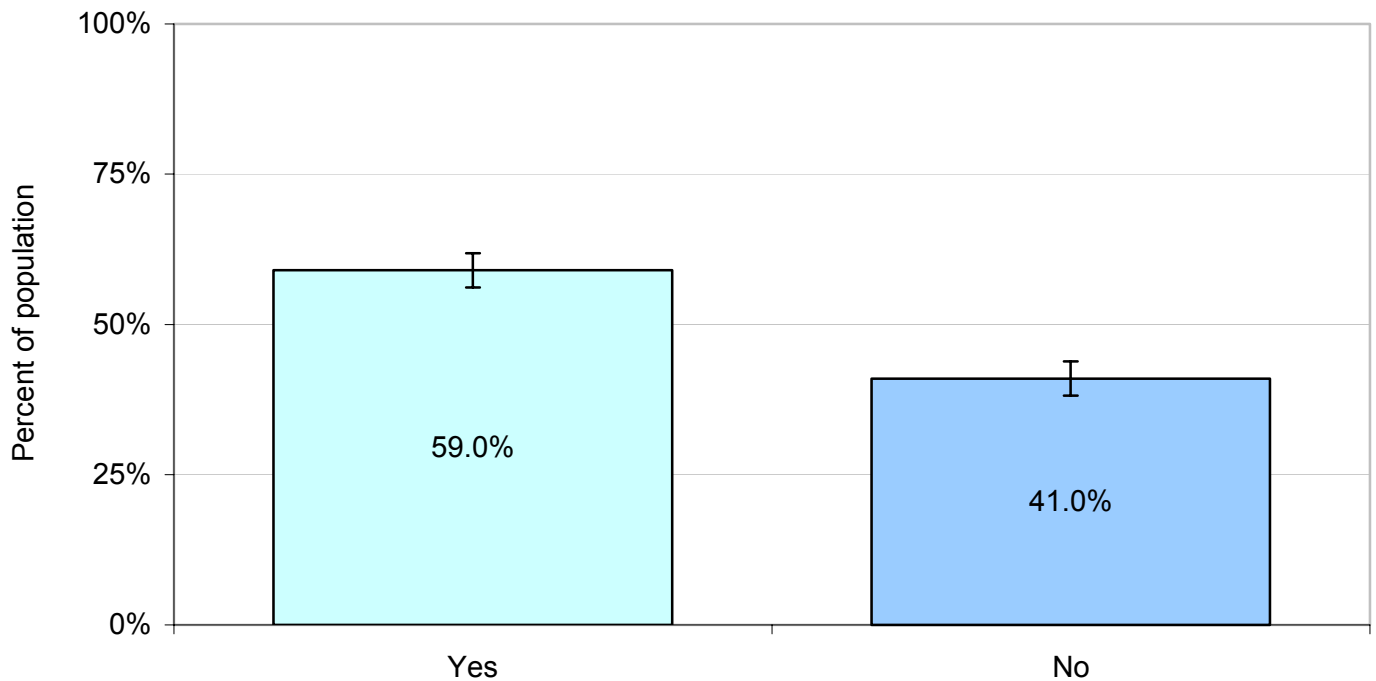


## USE OF RECREATIONAL FACILITIES

- Description:**
- Adults who have used local facilities in the City of Hamilton such as the local 'YMCA' or municipal facilities such as pools, rinks, playing fields, and parks in the past 12 months for physical activities, sport or other recreational activities.
  - Access to recreational facilities is an important part of maintaining a healthy body weight and managing stress, and enhancing social and leadership skills.

- Key Message:**
- Fifty-nine percent of adults in the City of Hamilton have used facilities in the City of Hamilton for physical activities, sports or other recreational activities in the last 12 months.

**Adults who have used facilities in the City of Hamilton for physical activities, sports, or other recreational activities in the last 12 months, 2004**



I - represents the 95% confidence intervals. If the survey was expanded from this sample to a larger sample, the result would be expected to fall between the lower and upper limits 95% of the time.

Source: Rapid Risk Factor Surveillance System (RRFSS), City of Hamilton, 2004.

- Limitations:**
- These data are based on questions only asked of population in the City of Hamilton age 18 years and over. The results provided are based on self-reported behaviours elicited through a telephone survey which was administered only in the English language.

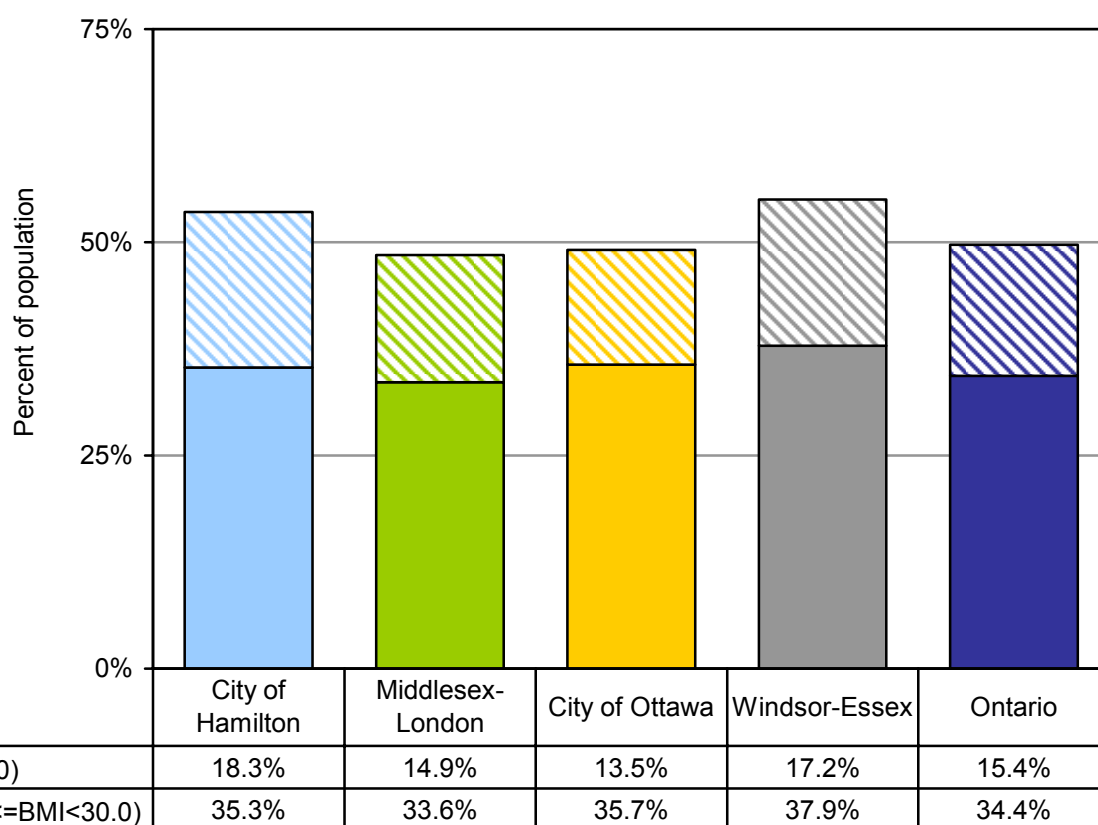


## BODY MASS INDEX (BMI) – PEER COMPARATORS

- Description:**
- Body Mass Index (BMI) is an index of weight to height ( $\text{kg}/\text{m}^2$ ) and is considered to be a useful indicator of health risks associated with being overweight and underweight.
  - The BMI categories were adapted from the World Health Organization (WHO) and Health Canada's "Health Risk Classification According to Body Mass Index (BMI) for use with adults age 18 years and older. They are not for use with pregnant or lactating women and persons less than 3 feet tall or greater than 6 feet 11 inches tall.
  - Health risks are often associated with underweight and overweight individuals.
  - A useful health status indicator in monitoring health promotion and disease prevention strategies designed to achieve healthy body weight status.

- Key Message:**
- The proportion of obese adults in the City of Hamilton is greater than the proportion in Middlesex-London and the City of Ottawa, and approximately the same as the proportion in Windsor-Essex.
  - The proportion of adults in the City of Hamilton who are overweight is greater than the proportions in Middlesex-London and the City of Ottawa, and lower than the proportion in Windsor-Essex.

**Population who have some excess weight or are overweight, City of Hamilton, select cities and Ontario, 2003**



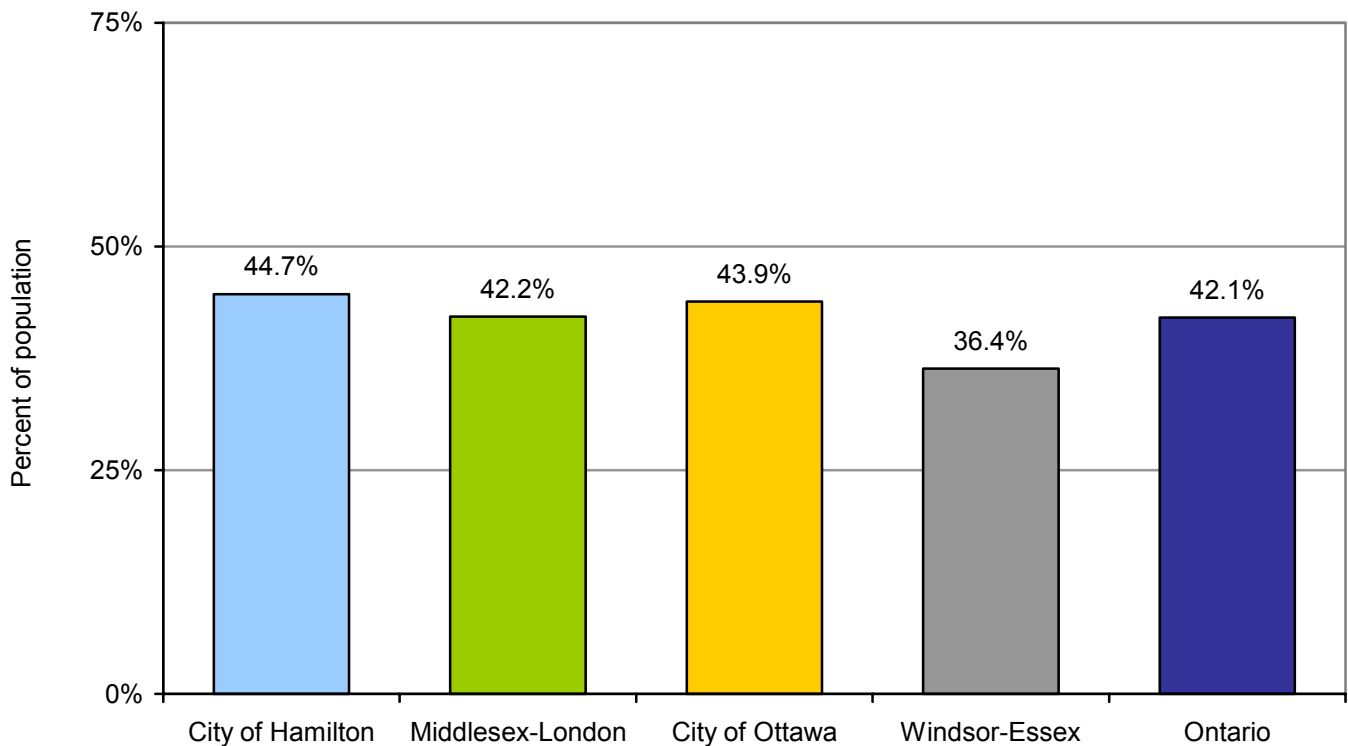
Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003



### FRUIT AND VEGETABLES CONSUMPTION – PEER COMPARATORS

- Description:**
- Population age 12 years and older who consume at least 5 servings of fruit and vegetables per day.
  - Unhealthy eating increases the risk of chronic disease conditions, such as obesity, hypertension, type II diabetes and heart disease
- Key Message:**
- The proportion of the population in the City of Hamilton age 12 years and older who consume at least five servings of fruit and vegetables per day is significantly higher than that of Middlesex-London, the City of Ottawa, and Windsor-Essex.

**Population age 12 and older that consume at least 5 servings of fruit and vegetable per day, City of Hamilton, select cities and Ontario, 2003**



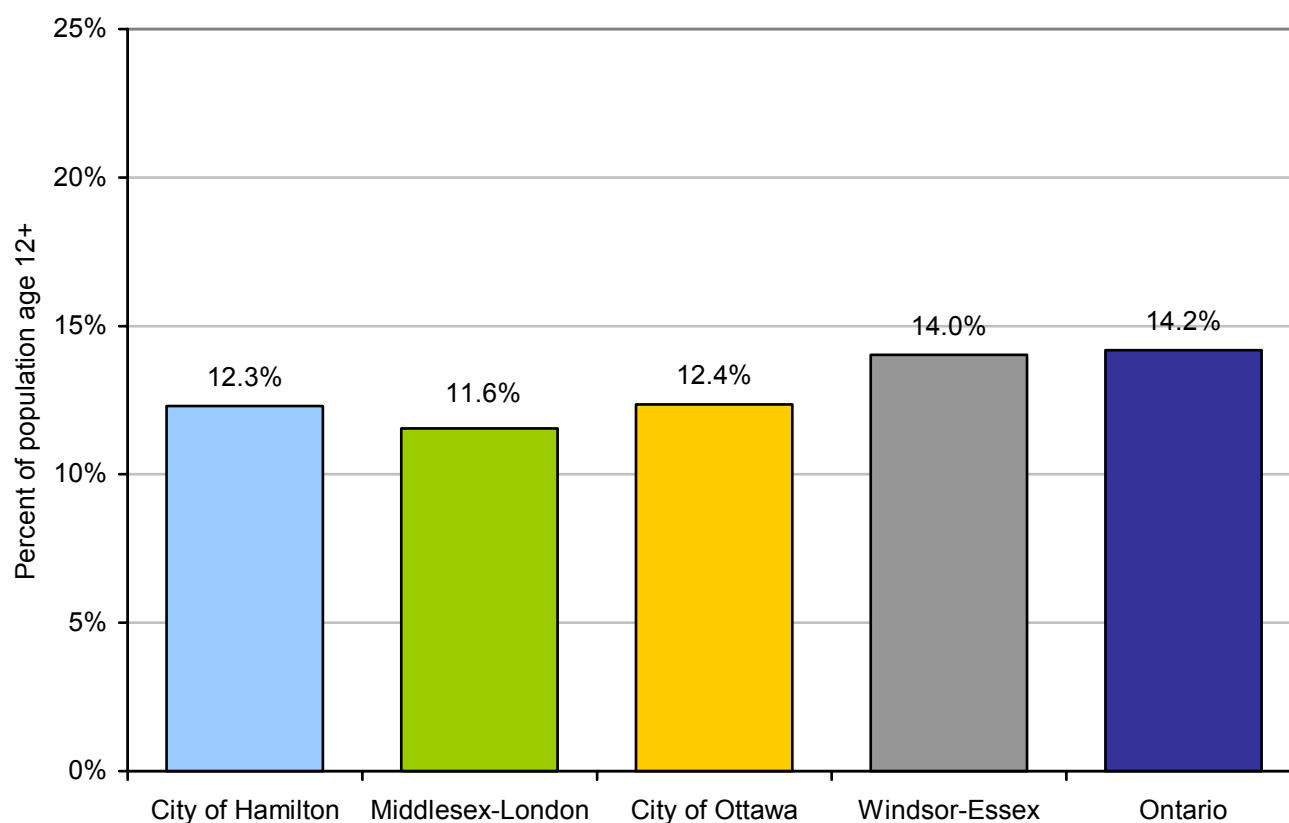
Source: Canadian Community Health Survey (CCHS) Cycle 2.1, 2003



## SELF-PERCEIVED ORAL HEALTH – PEER COMPARATORS

- Description:**
- Population age 12 years and over who perceive their oral health to be fair/poor.
  - Dental health promotion has been shown to prevent chronic dental diseases such as gingivitis, and current evidence shows that it may also help prevent major chronic diseases, such as heart disease.
- Key Message:**
- A small proportion of the population in the City of Hamilton age 12 years and older indicated that their oral health is fair or poor (12%), which is slightly lower than the Ontario average (14%).
  - The proportion of the population in the City of Hamilton that perceive their oral health as fair or poor is significantly higher than that reported in Middlesex-London and significantly lower than that reported in Windsor-Essex.

**Adults who perceive their oral health to be fair or poor, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003



## REGULAR DENTAL CHECK-UPS – PEER COMPARATORS

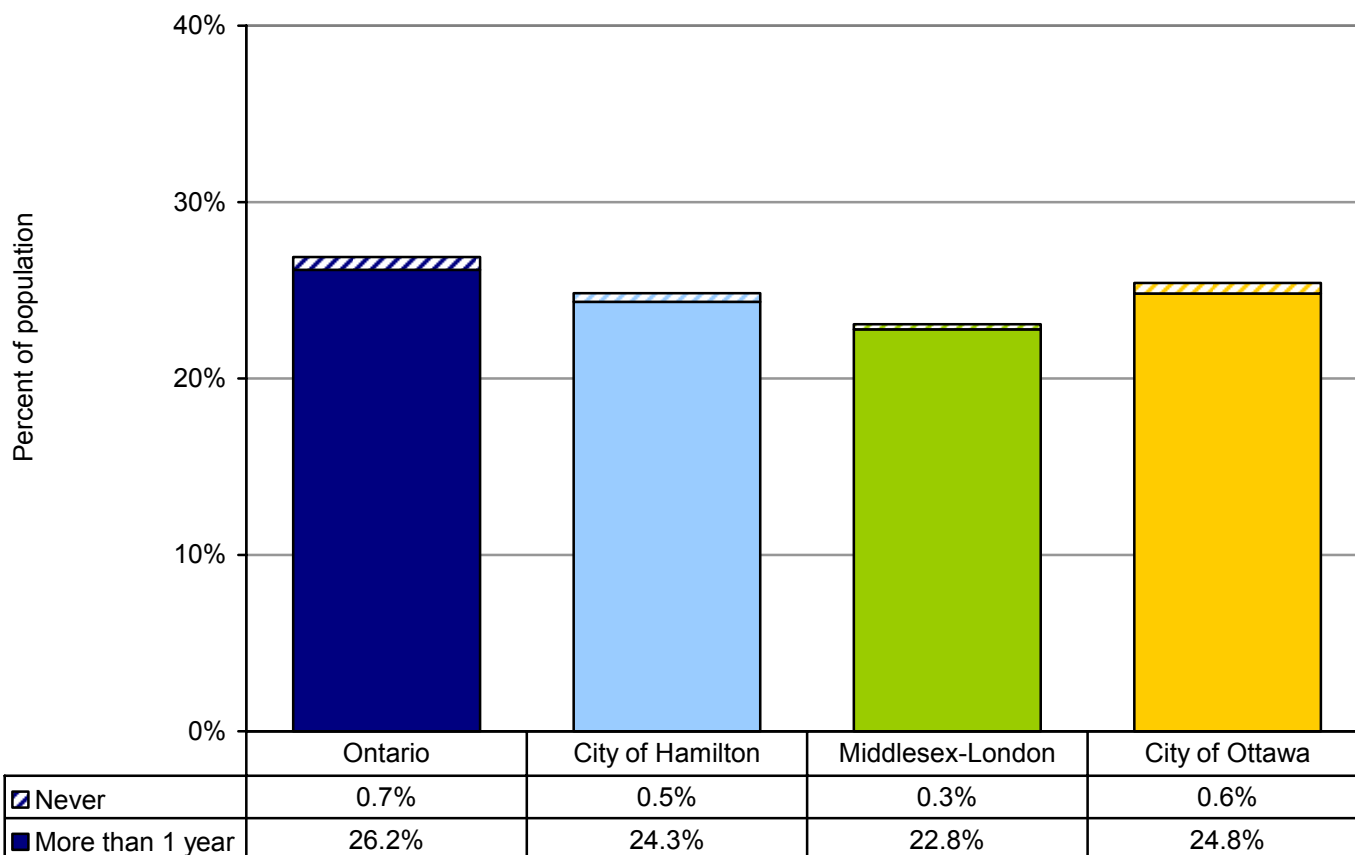
**Description:**

- Population age 18 years and older by the time since their last visit to the dentist.
- Dental health promotion has been shown to prevent chronic dental diseases such as gingivitis, and current evidence shows that it may also help prevent major chronic diseases, such as heart disease.

**Key Message:**

- The proportion the population in the City of Hamilton for which it has been more than 1 year since their last dental visit is significantly greater than for Middlesex-London and significantly lower than that for the City of Ottawa.
- The proportion the population in the City of Hamilton who have never visited a dentist in their lifetime is significantly higher than that reported in Middlesex-London and significantly lower than that reported in the City of Ottawa.

**Time since last dental visit is more than 1 year or has never visited a dentist, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003

**Limitations:**

- Data not available for the Windsor-Essex health region.

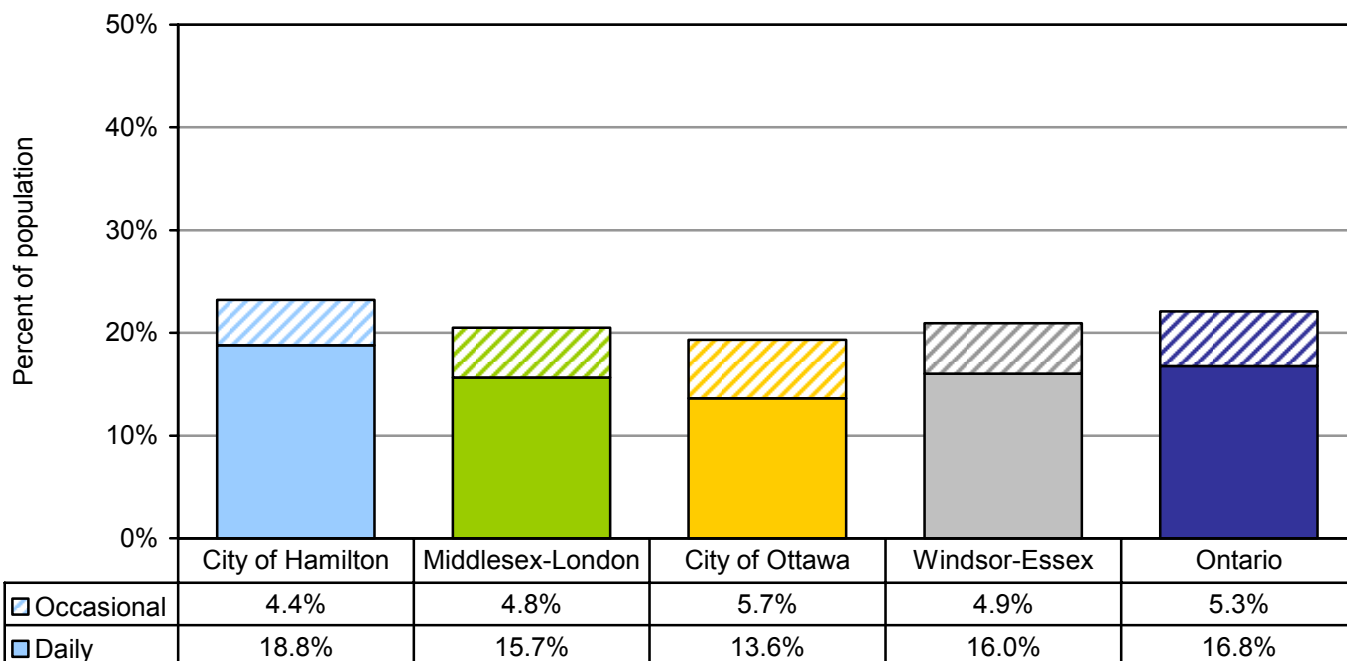


### SMOKING STATUS— PEER COMPARATORS

- Description:**
- Population age 12 and over who reported being either a smoker (daily or occasional) or a non-smoker (former smoker or never smoked).
  - Tobacco use is the leading preventable cause of illness and premature death in Canada.
  - Smoking is a major risk factor for developing lung cancer and cardiovascular disease, and is also a risk factor for other cancers and diabetes complications.
  - Population smoking rates predict higher death and disease rates for the future.

- Key Message:**
- The proportion of the population age 12 years and older who are daily smokers in the City of Hamilton is significantly greater than the proportions in Middlesex-London, City of Ottawa and Windsor-Essex.
  - The proportion of occasional smokers in the City of Hamilton is significantly higher than that of Middlesex-London, City of Ottawa and Windsor-Essex.

**Daily and occasional smokers, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003

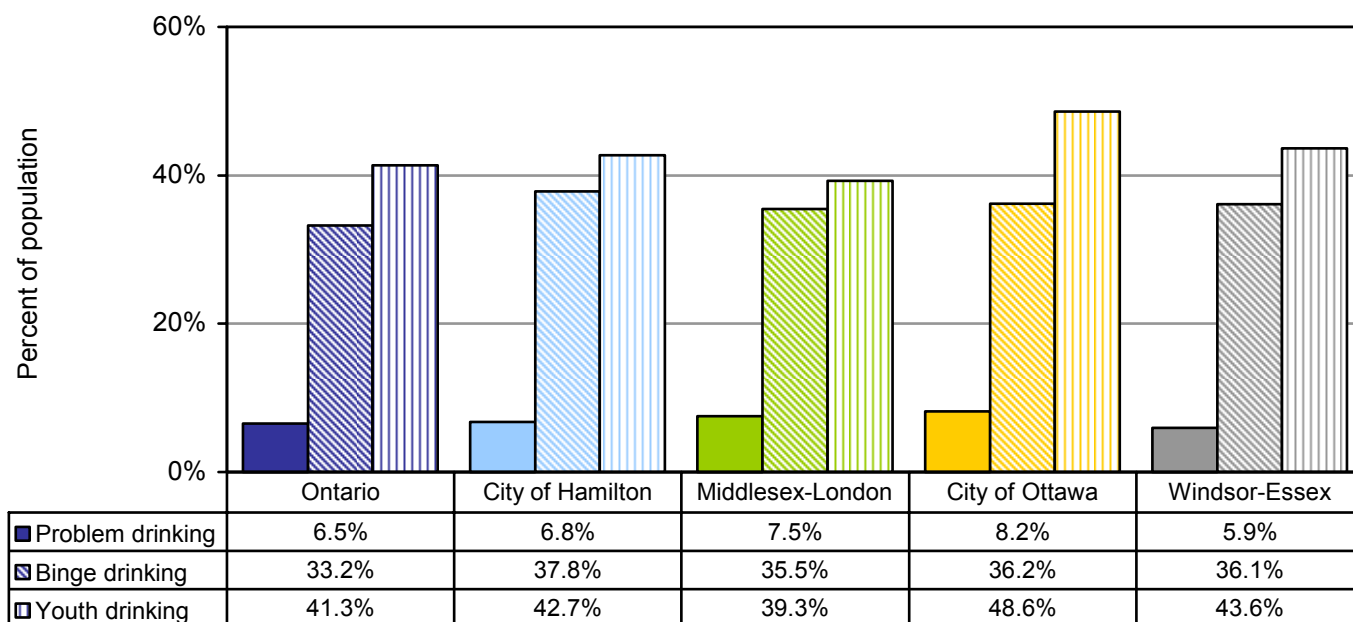


## DRINKING BEHAVIOUR – PEER COMPARATORS

- Description:**
- Population classified by drinking behaviour, based on self-reported alcohol consumption in the past 12 months.
  - Binge drinking is defined as consumption of more than 5 drinks on one occasion; problem drinking is defined as consumption of greater than 14 drinks per week for males and greater than 9 drinks per week for females; and youth drinking is defined as regular or occasional consumption of alcohol by those less than 19 years of age.
  - Alcohol abuse is a risk factor for injury-related hospitalizations and is a risk factor for several health conditions and death.
  - Prevalence of alcohol abuse can be an indicator of overall community well-being.

- Key Message:**
- Forty-three percent of the City of Hamilton’s youth (age 12 to 18 years) reported that they drink alcohol on a regular or occasional basis.
  - Thirty-eight percent of the population in the City of Hamilton reported binge drinking and 6.8% reported problem drinking behaviour.
  - The proportion of the population in the City of Hamilton who binge drink is significantly greater than the proportion in Ontario.
  - Like the City of Hamilton, more than one-third of the population in London, Ottawa, and Windsor engage in binge drinking.
  - The proportions of the population that problem drink and binge drink are comparable in the City of Hamilton, Middlesex-London, Ottawa, and Windsor-Essex.
  - The proportion of youth under 19 years of age that drink in the City of Hamilton is significantly higher than the proportion in Middlesex-London, but significantly lower than the proportion in Ottawa and Windsor-Essex.

**Youth drinking, binge drinking and problem drinking, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003

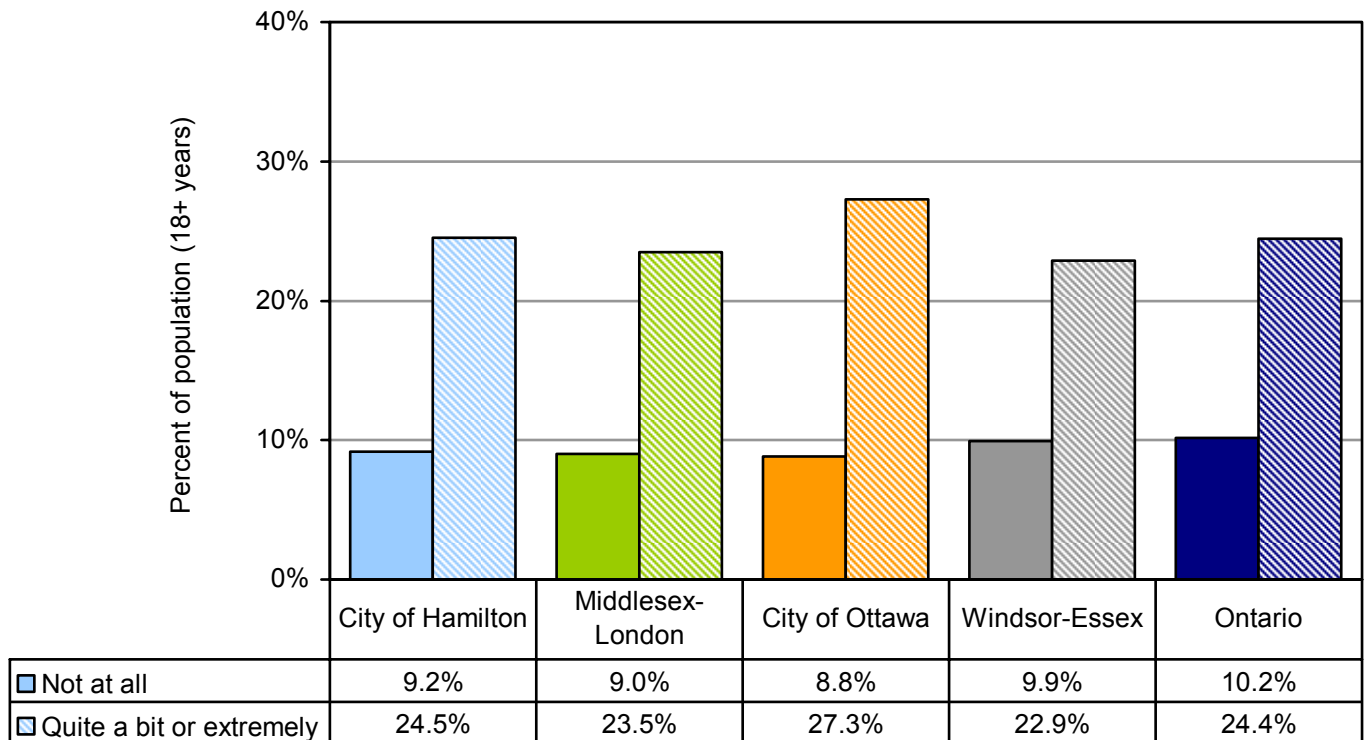


## STRESS – PEER COMPARATORS

- Description:**
- Population age 18 years and older by self-reported level of stress in own life on most days.
  - Stress is linked to an increased risk of chronic diseases, such as heart disease and associated risk factors (e.g., smoking, alcohol consumption, and overweight/obesity).
  - Stress is a general measure of individual wellness.

- Key Message:**
- Nine percent of the population in the City of Hamilton reported that most days in their own life are not at all stressful.
  - The proportion of the population in the City of Hamilton who reported that the level of stress on most days in their life is quite a bit or extremely stressful is significantly lower than the proportion in Ottawa and significantly higher than the proportions in Middlesex-London and Windsor-Essex .
  - The proportion of the population age 18 years and older who reported that they do not experience any level of stress on most days of the week are comparable between the City of Hamilton and the select comparator cities.

**Level of self-reported stress, City of Hamilton, select cities and Ontario, 2003**



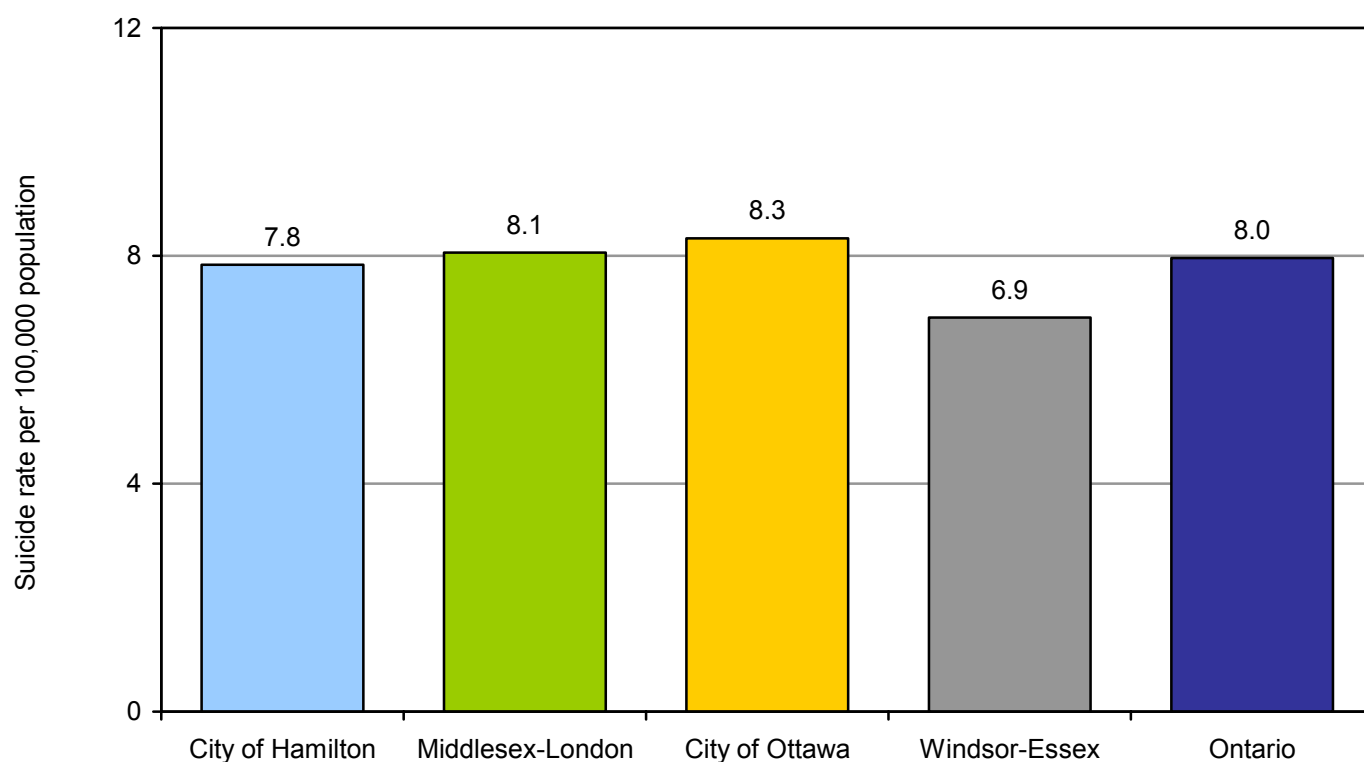
Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003



## SUICIDE DEATHS – PEER COMPARATORS

- Description:**
- The number of suicide deaths per 100,000 population per year.
  - Suicide is defined as the “the intentional self-infliction of death” and is an important cause of morbidity and mortality
  - Suicide mortality rates are useful indicators for planning preventive initiatives as well as treatment programs and services.
- Key Message:**
- From 1992 to 2001, the overall trend of suicide-related death rates has shown a decline in the City of Hamilton.
  - During this time period, the overall rate of suicide deaths in the City of Hamilton has mostly been below the provincial average.
  - In 2001, there were almost 8 suicide deaths per 100,000 population in the City of Hamilton. This translates to 40 suicide related deaths in the City of Hamilton.
  - The 2001 suicide rate in the City of Hamilton is similar to the Ontario rate.
  - Suicide-related death rates for the City of Hamilton, Middlesex-London, and the City of Ottawa are similar at approximately 8 per 100,000 population.

**Rate of death due to suicide, City of Hamilton, select cities and Ontario, 2001**



Source: Provincial Health Planning Database (PHPDB) MOHLTC, 2005



## 8.0 FAMILY HEALTH

One of the main goals of Family Health programs is to promote the health of children, youth and families. To effectively do so, it is important to monitor aspects of health at all stages of the lifecycle. This section of the report will focus on reproductive health, child/youth health, and seniors' health among residents of Hamilton.

Research has demonstrated that investing in all children at an early age is an investment in human and economic development, which benefits society as a whole. The City of Hamilton's Public Health and Community Services Department values families and children, and strive, through evidence based programs and services, to support infants, children, youth and their families to make informed choices about their health, thus providing the opportunity for optimal development and achievement of potential.

The indicators presented in this section are also important for monitoring protective factors, such as good prenatal care and breastfeeding, and reducing risk factors (for example, low birth weight, childhood obesity and childhood poverty), that have an impact on family functioning and on child growth and development. Knowing about protective and risk factors that are operational, or that need to be targeted, affords us the ability to influence factors that promote or hinder the development of resilience, that is, an individual's or family's ability to adapt to and recover from trauma or stress.

For example, information on:

- prevalence of childhood obesity will highlight the need for nutrition promotion and services to assist parents' choices for feeding their children and child care menu planning.
- poverty, homelessness and early development instrument (EDI) indicators highlights the need for resources and services to offset detrimental effects on child development.
- pre-term birth rates and low birth weight rates may be useful as predictors of children's health as they grow up.
- pre-natal care may be a good predictor of low birth weight and preterm births. Good early prenatal care can reduce the rates of preterm and low birth weight babies, which in turn promotes good child health.
- breastfeeding is of value, in that the higher the proportion of women initiating breastfeeding and the longer breastfeeding continues, the better the health status of young children.

In general, the effective monitoring of family health indicators is an important aspect of the evaluation of the social and physical health status of people within our population.



## AGE OF WOMEN GIVING BIRTH

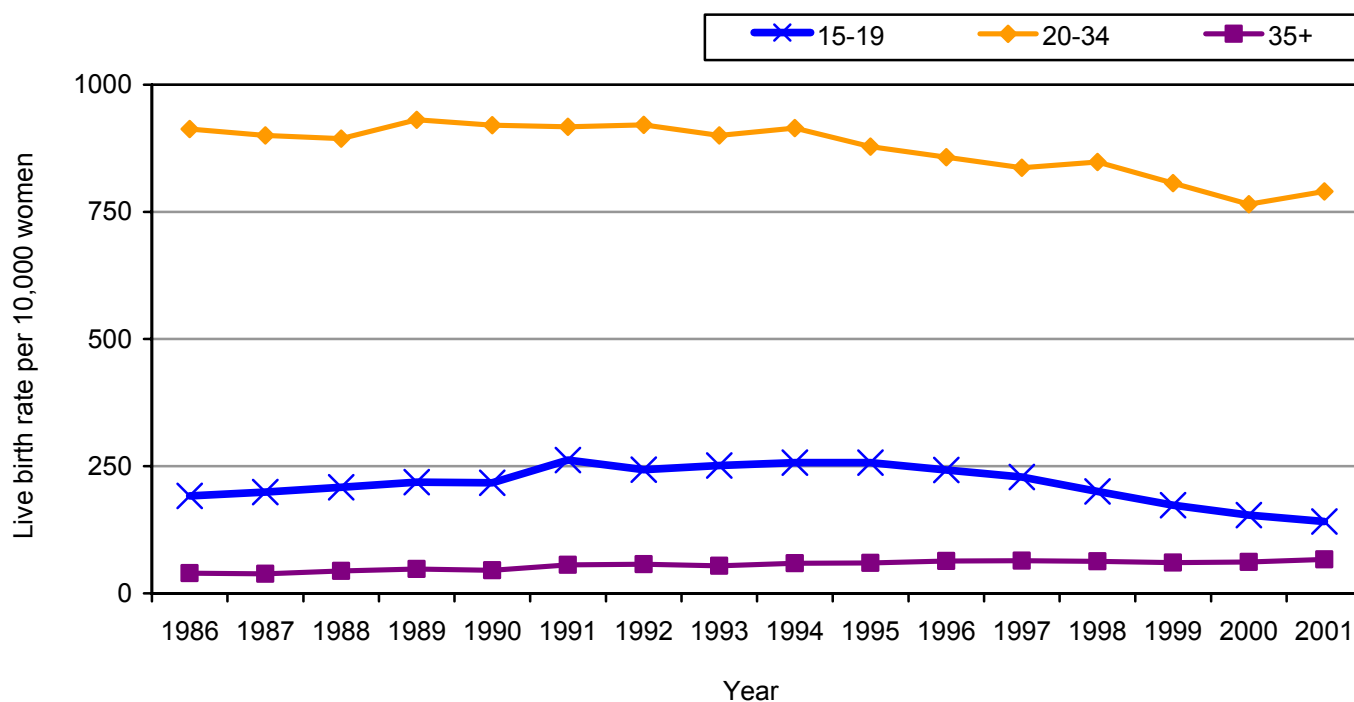
**Description:**

- The number of live births per 10,000 women by the following age groups: 15 to 19 years, 20 to 35 years, and 35+ years.
- Risks associated with pregnancy increase gradually with age. Women over 35 years of age have a slightly increased risk for complications during pregnancy.

**Key Message:**

- In the City of Hamilton, the live birth rate among teenage women has shown a steady decline since 1996. In 2001, the live birth rate for this age group was 141 per 10,000 women, down from 154 per 10,000 in 2000.
- Throughout the period 1986 to 2001, the live birth rate among women 20 to 34 years of age was higher than the rates among teenaged women and women 35 years of age and older.
- From 1986 to 2001, there was a steady but gradual increase in live birth rate among women 35 years of age and older.

**Live birth rate (per 10,000 women) by age group of mother giving birth, City of Hamilton, 1986-2001**



Source: Ontario Live Birth Database 1986-2001, Health Planning System, Ontario Ministry of Health and Long-term Care

**Limitations:**

- Live birth rates do not take into account stillbirths and miscarriages. However, they are useful for assessing population growth.



## LIVE BIRTHS – PEER COMPARATORS

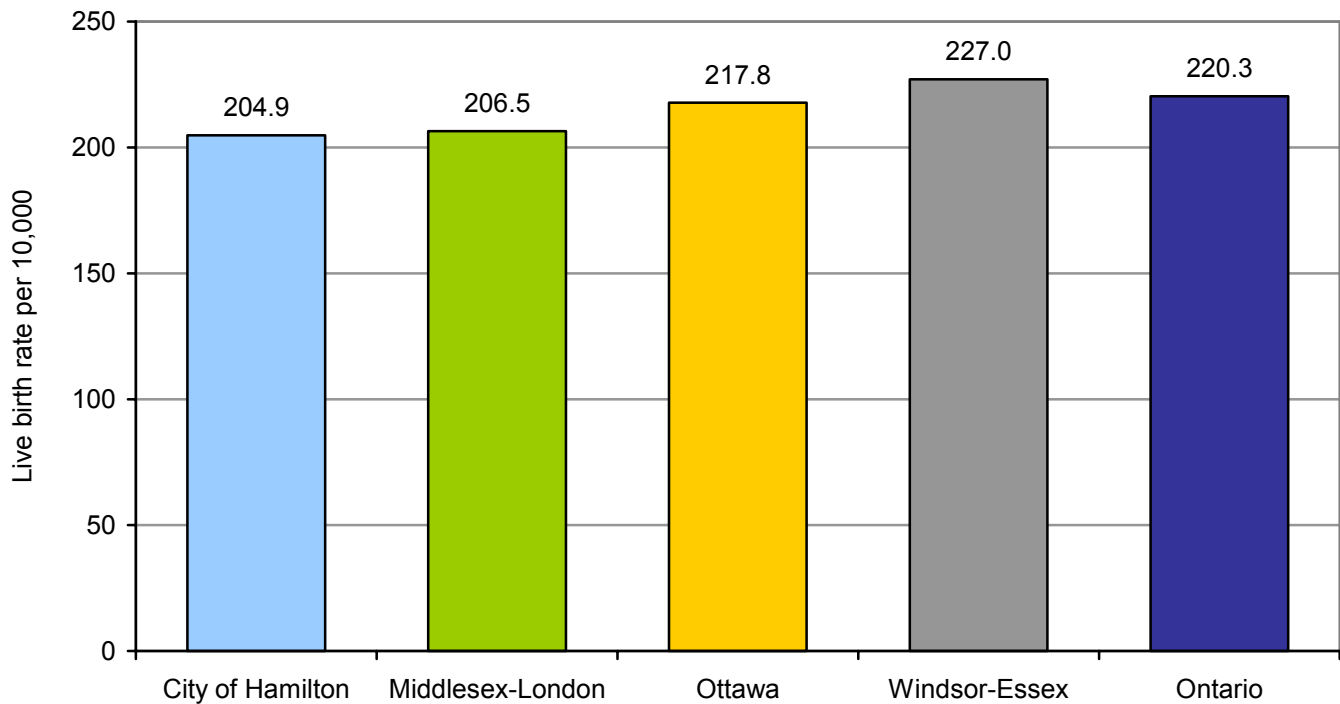
**Description:**     ▪ The number of live births per 10,000 females in the population.

**Key Message:**    ▪ In 2001, the live birth rate in the City of Hamilton was 204.9 per 100,000 females. This is approximately 5290 live births.

                          ▪ The live birth rate in the City of Hamilton in 2001 was lower than the provincial average.

                          ▪ In 2001, the live birth rate in the City Hamilton was lower than the live birth rate in each of the select comparison cities.

**Live birth rate (per 10,000 women), City of Hamilton, select cities and Ontario, 2001**



Source: Ontario Live Birth Database 2001, Health Planning System, Ontario Ministry of Health and Long-term Care

**Limitations:**    ▪ Live birth rates do not take into account stillbirths and miscarriages and, as such, they are useful for assessing population growth.

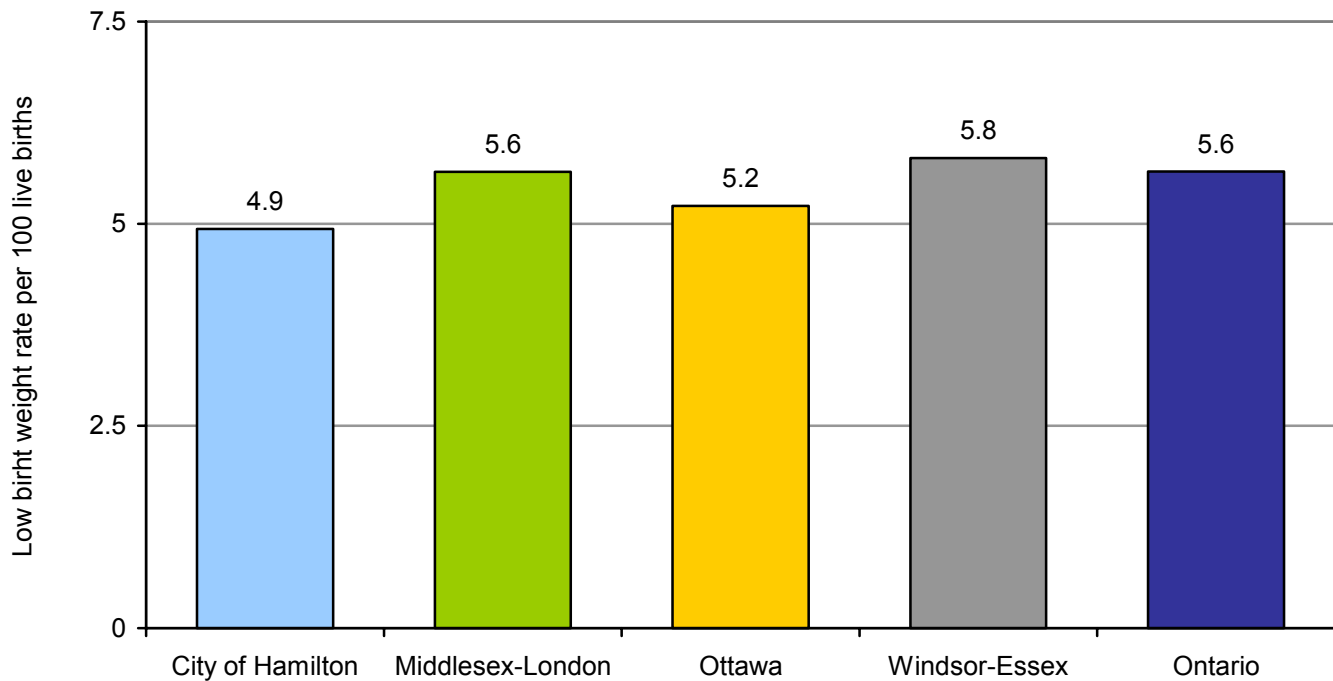


## LOW BIRTH WEIGHT – PEER COMPARATORS

- Description:**
- The number of live births weighing less than 2,500 grams, expressed as a percentage of all live births.
  - Low birth weight is a key determinant of perinatal morbidity and mortality.
  - Low birth weight babies are at increased risk of having poor growth and health outcomes during infancy and childhood.

- Key Message:**
- There has been a gradual decline in low birth weight rates in the City of Hamilton from 1998 to 2001, while rates in Ontario remained relatively constant over the same time period.
  - In 2001, 4.9% of live births (or 261 live births) in the City of Hamilton weighed less than 2.5 kilograms compared to 5.6% of live births in Ontario.
  - The 2001 low birth weight rate in the City of Hamilton was lower than the rate in the select comparison cities.

**Low birth weight rate, City of Hamilton, select cities and Ontario, 2001**



Source: Ontario Live Birth Database 2001, Health Planning System, Ontario Ministry of Health and Long-term Care

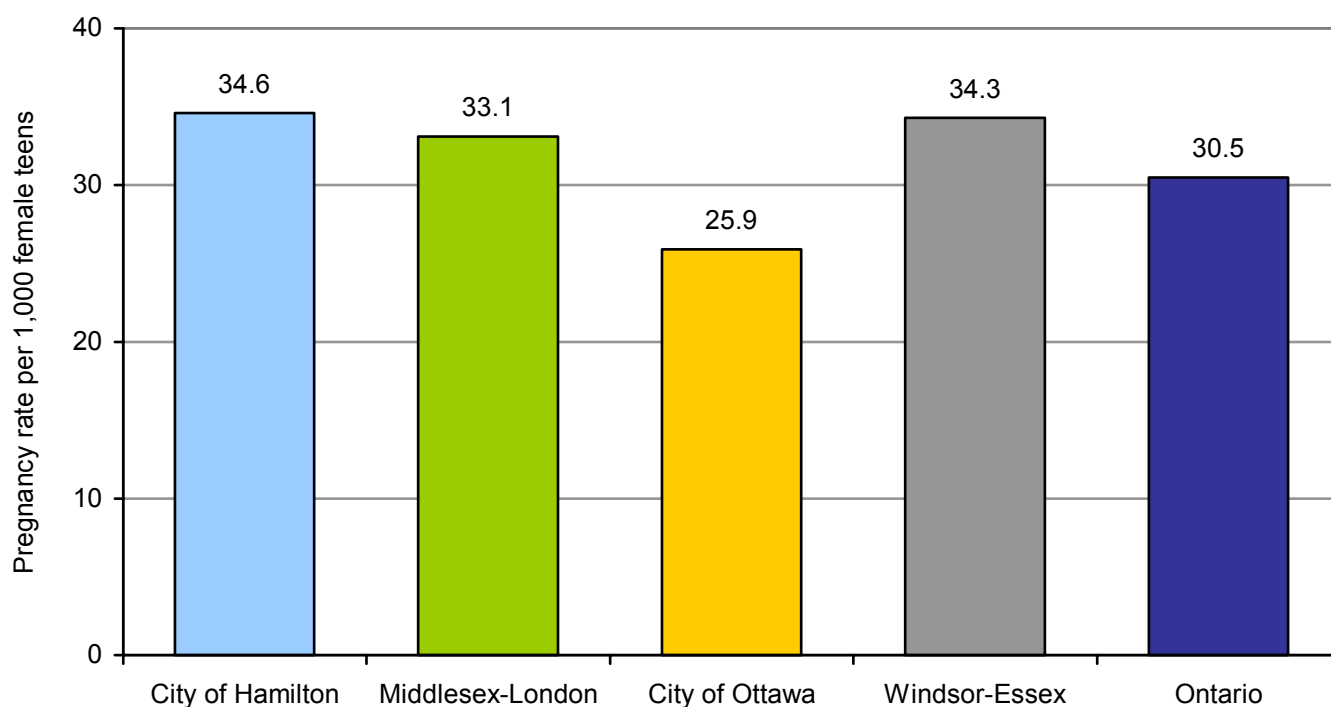
- Limitations:**
- Low birth weight does not take into account gestational age at birth, and therefore includes both full-term and premature births.



## TEENAGE PREGNANCY – PEER COMPARATORS

- Description:**
- The number of pregnancies among teenage women per 1,000 women in the population.
  - Teen pregnancy is defined as pregnancy resulting in a live birth, abortion or stillbirth to a female age 15 to 19 years.
  - A high rate of teen pregnancy is often seen as a cause for concern because teen mothers and their infants are at increased risk of poor health outcomes such as toxemia, premature birth and low birth weight.
- Key Message:**
- Teen pregnancy rates have steadily declined between 1995 and 2001 in both the City of Hamilton and Ontario; however the rates have been consistently higher in the City of Hamilton than Ontario.
  - In 2001, 34.6 per 1,000 female teenagers in the City of Hamilton became pregnant. This translates to approximately 584 teen pregnancies in the City of Hamilton in 2001.
  - The 2001 teenage pregnancy rate in the City of Hamilton was higher than the teenage pregnancy rate in Ontario, which was 30.5 per 1,000 teenage females.
  - In 2001, the teenage pregnancy rate in the City of Hamilton was higher than the rates of the select comparator cities.

**Teenage pregnancy rate per 1,000 female teen population, City of Hamilton, select cities and Ontario, 2001**



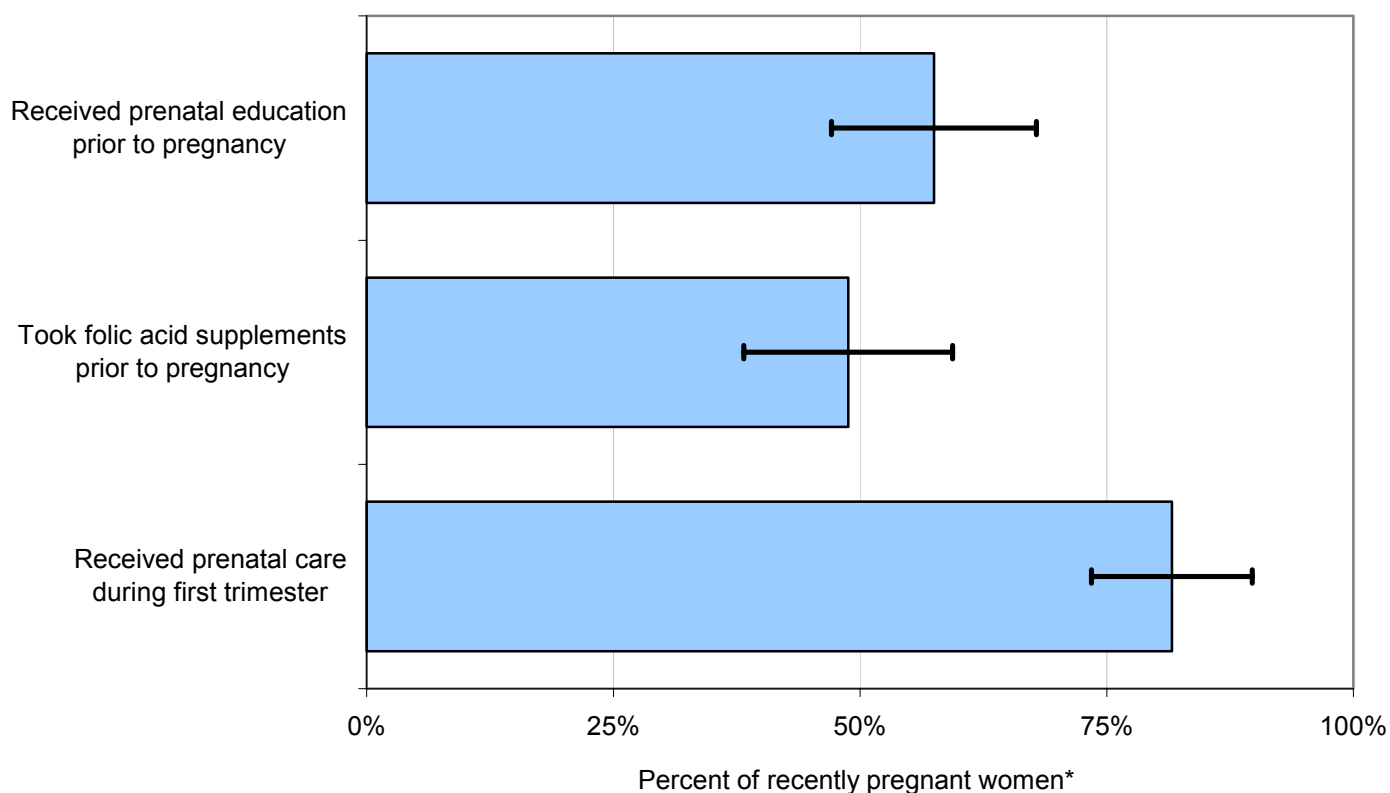
Source: Ontario Live Birth, Still Birth Database 2001, Health Planning System, Ontario Ministry of Health and Long-term Care



## PRENATAL CARE

- Description:**
- Proportion of recently pregnant women who, prior to becoming pregnant, received prenatal education, took folic acid supplements or received prenatal care during the first trimester.
  - Recently pregnant women include: women pregnant at the time surveyed or, women who had been pregnant during the 5 years prior to being surveyed.
  - Prenatal care is often credited with improving pregnancy and birth outcomes.
- Key Message:**
- Fifty-eight percent of recently pregnant women visited a health care provider and received prenatal education prior to becoming pregnant.
  - Forty-nine percent of recently pregnant women took folic acid supplements prior to becoming pregnant.
  - Eighty-two percent of recently pregnant women received prenatal care during the first trimester of pregnancy

***Proportion of recently pregnant women who received prenatal education, took folic acid supplements or received prenatal care during the first trimester, City of Hamilton, 2002***



I - represents the 95% confidence intervals. If the survey was expanded from this sample to a larger sample, the result would be expected to fall between the lower and upper limits 95% of the time.

*Source: Rapid Risk Factor Surveillance System (RRFSS), City of Hamilton, 2002*

- Limitations:**
- Due to the nature of the survey, it is difficult to collect large samples of information on targeted populations (such as pregnant women or those who have given birth in the past 5 years). Hence, it should be noted that the statistics presented in the graph are based on a very small sample size.

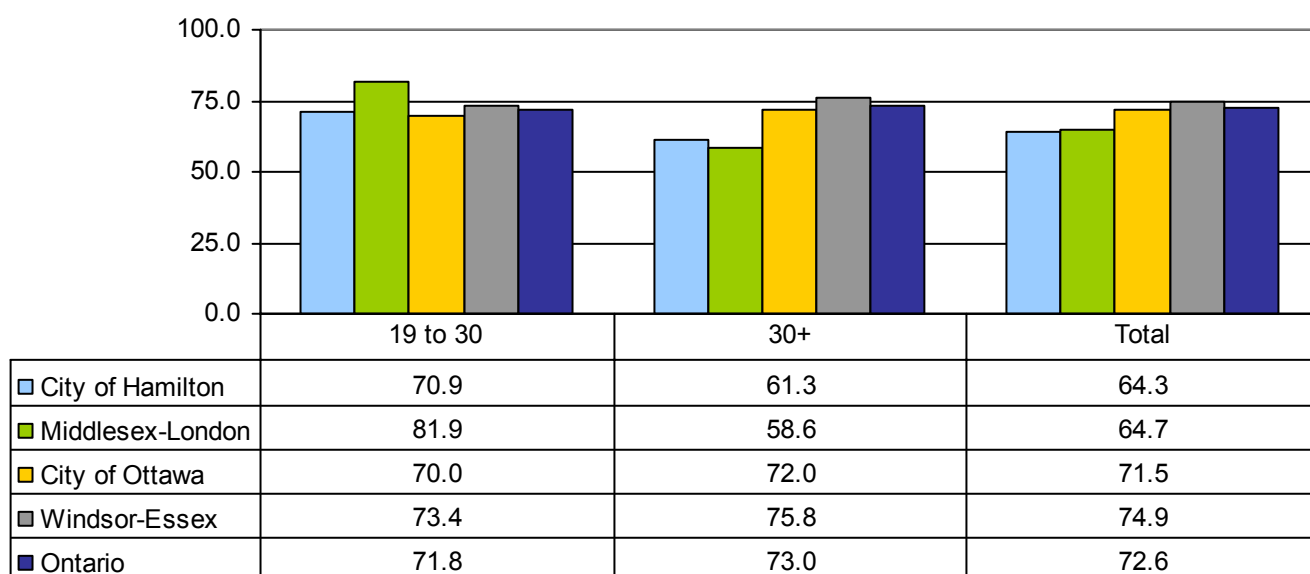


## BREASTFEEDING – PEER COMPARATORS

- Description:**
- Proportion of recent mothers who have breastfed or tried to breastfeed the child to whom they had most recently given birth.
  - Recent mother refers to women who had given birth to a live newborn in the 5 years prior to being surveyed.
  - Breastfed babies have lower rates of infant morbidity and mortality.

- Key Message:**
- In total, 64% of recent mothers in the City of Hamilton surveyed had breastfed or had tried to breastfeed the child to whom they had most recently given birth. This represents a decrease from the 2000/01 proportion of 87%.
  - A higher proportion of recent mothers 19 to 30 years old had breastfed or had tried to breastfeed their child compared to recent mothers 30 years of age and older (71% compared to 61% respectively).
  - In both age groups the proportion of recent mothers who breastfed or attempted to breastfeed was lower in the City of Hamilton than Ontario.
  - For recent mothers age 19 to 30 years, the proportion who breastfed or tried to breastfeed their most recent child was slightly lower in the City of Hamilton than Middlesex-London and Windsor-Essex.
  - For recent mothers age 30 years and over, the proportion who breastfed or tried to breastfeed their most recent child was lower in the City of Hamilton than the City of Ottawa and Windsor-Essex.

**Recent mothers who have breastfed or tried to breastfeed the child they most recently gave birth to, City of Hamilton, select cities and Ontario, 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) Cycle 2.1, 2003

- Limitations:**
- Due to the nature of the survey, it is difficult to collect large samples of information on targeted populations (such as pregnant women or those who have given birth in the past 5 years), hence it should be noted that the statistics presented in the graph are based on a limited sample size.
  - These data do not provide information on the duration of breast feeding



## CHILD MORTALITY

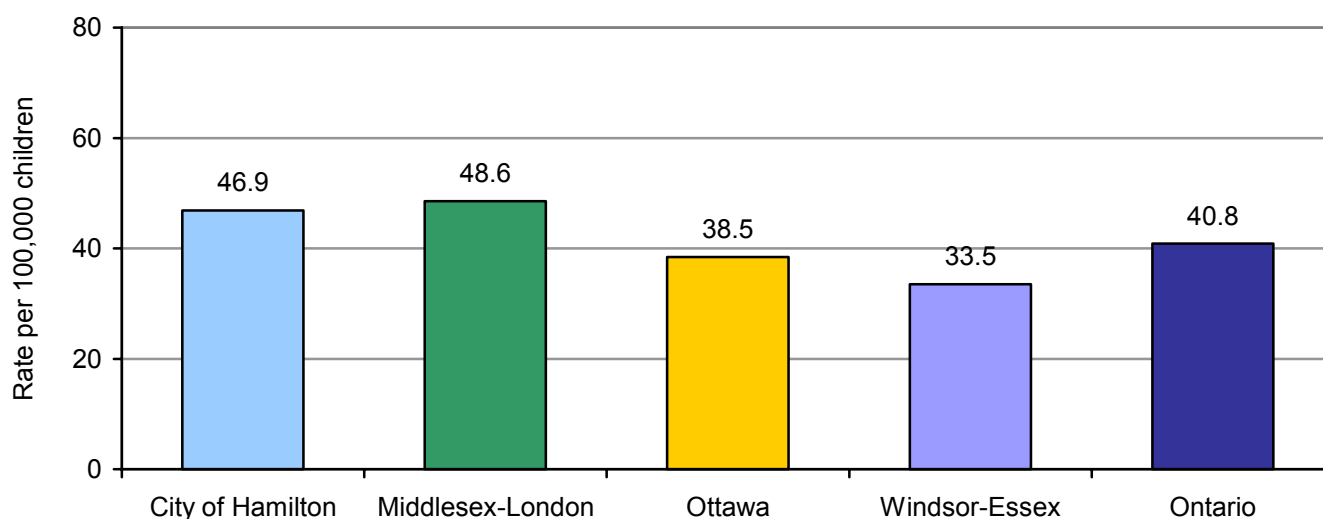
**Description:**

- The number of deaths per 100,000 children 19 years of age and younger.
- The rate of deaths among children is a general indicator of child health and welfare in the cities and regions described.

**Key Message:**

- In 2001, 47 per 100,000 children age 19 years and younger died from various causes in the City of Hamilton.
- The mortality rate among children 19 years of age and younger in 2001 was higher in the City of Hamilton than in Ottawa, Windsor-Essex and Ontario.

**Mortality rate for children age 19 and under, City of Hamilton, select cities and Ontario, 2001**



Source: Mortality data, HELPS, 2001

**Limitations:**

- These data do not reflect the distribution of mortality by age, and therefore do not indicate whether childhood mortality is high across all age groups or only in some age groups.

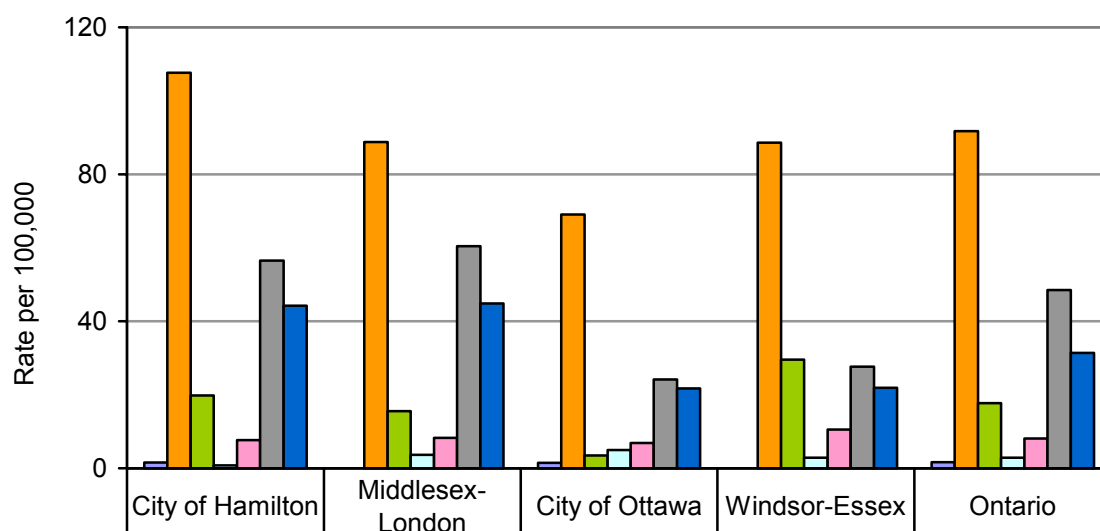


## CHILD HOSPITALIZATION

- Description:**
- The rates of hospitalization due to selected causes among children age 19 years and younger.
  - Rates of hospitalization among children due to injury and trauma reflect the welfare and safety of children in various regions.

- Key Message:**
- In 2003, accidental falls were the most common cause of hospitalization among children age 19 years and under in the City of Hamilton, as well as in the select comparator cities and Ontario.
  - In the City of Hamilton in 2003, accidental suffocation was the least common cause of hospitalization among children 19 years old and younger. The rate of accidental suffocation was lower in the City of Hamilton than the select comparator cities and Ontario.
  - In 2003, the rate of hospitalization due to falls among children in the City of Hamilton was higher than the select comparator cities and Ontario.
  - The rate of hospitalization due to vehicular accidents among children in the City of Hamilton in 2003 was higher than the Ontario rate but was lower than the rate in the Middlesex-London area.

**Hospitalization rate due to select causes for children less than 19 years of age, City of Hamilton, select cities and Ontario, 2003**



	City of Hamilton	Middlesex-London	City of Ottawa	Windsor-Essex	Ontario
Accidental drowning	1.5	0.0	1.5	0.0	1.7
Accidental fall	107.7	88.8	69.1	88.6	91.8
Accidental poisoning	19.9	15.6	3.5	29.5	17.8
Accidental suffocation	0.8	3.7	4.9	2.9	2.9
External causes of burns	7.6	8.2	6.9	10.5	8.1
Motor vehicle traffic crashes	56.5	60.4	24.2	27.6	48.5
Sports injury	44.3	44.8	21.7	21.9	31.4

Source: Provincial Health Planning Database, June 2004

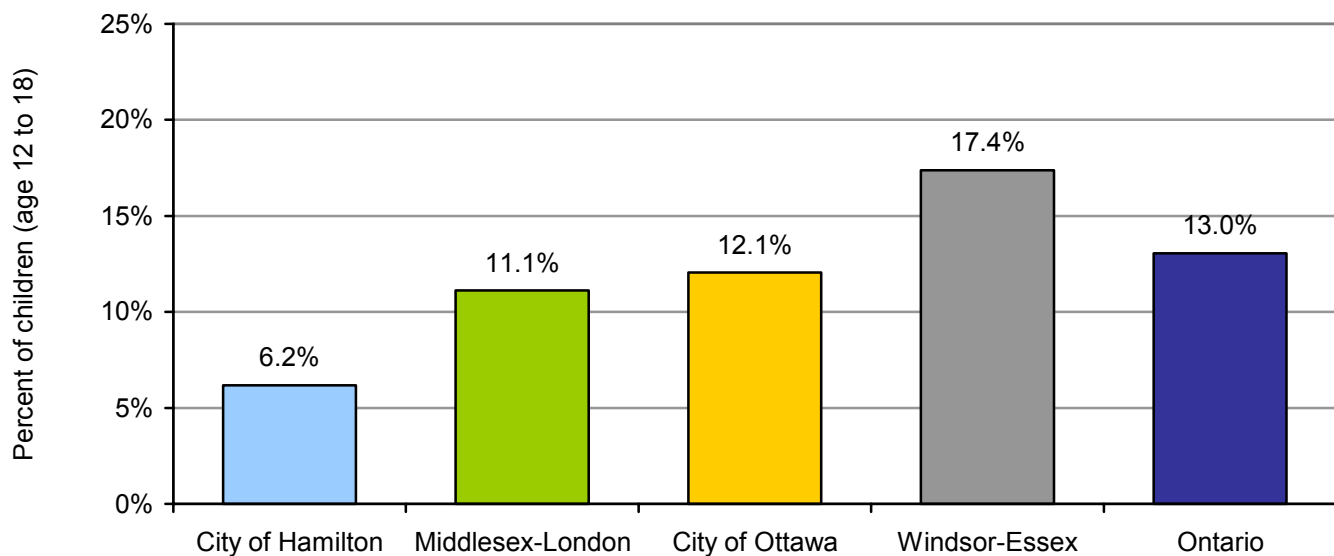
**Limitations:** These data do not reflect incidents of injury or trauma to children that do not lead to hospitalization.



## CHILDREN WHO HAVE ASTHMA – PEER COMPARATORS

- Description:**
- Proportion of children age 12 to 18 years diagnosed with asthma.
  - Asthma is an chronic obstructive lung disease which may cause lung scarring and subsequent decline in lung function over time, resulting in possible hospitalization and/or death.
  - Asthma is the most common chronic condition in children less than 10 years of age
- Key Message:**
- The prevalence of children with asthma in the City of Hamilton in 2003 has decreased since 2000/2001. In 2003, 6.2% of children age 12 to 18 years in the City of Hamilton had been diagnosed with asthma, which is less than half the Ontario prevalence.
  - In 2003, the prevalence of asthma among children in the City of Hamilton was lower than in the select comparator cities.

**Children age 12 to 18 years who have asthma; City of Hamilton, select cities and Ontario; 2003**



Source: Statistics Canada, Canadian Community Health Survey (CCHS) 2.1, 2003

- Limitations:**
- Participants in the Canadian Community Health Survey were 12 years of age and older, therefore, caution should be used when generalizing results to children under 12 years of age.



### SUBSIDIZED DAYCARE SPACES - PEER COMPARATORS

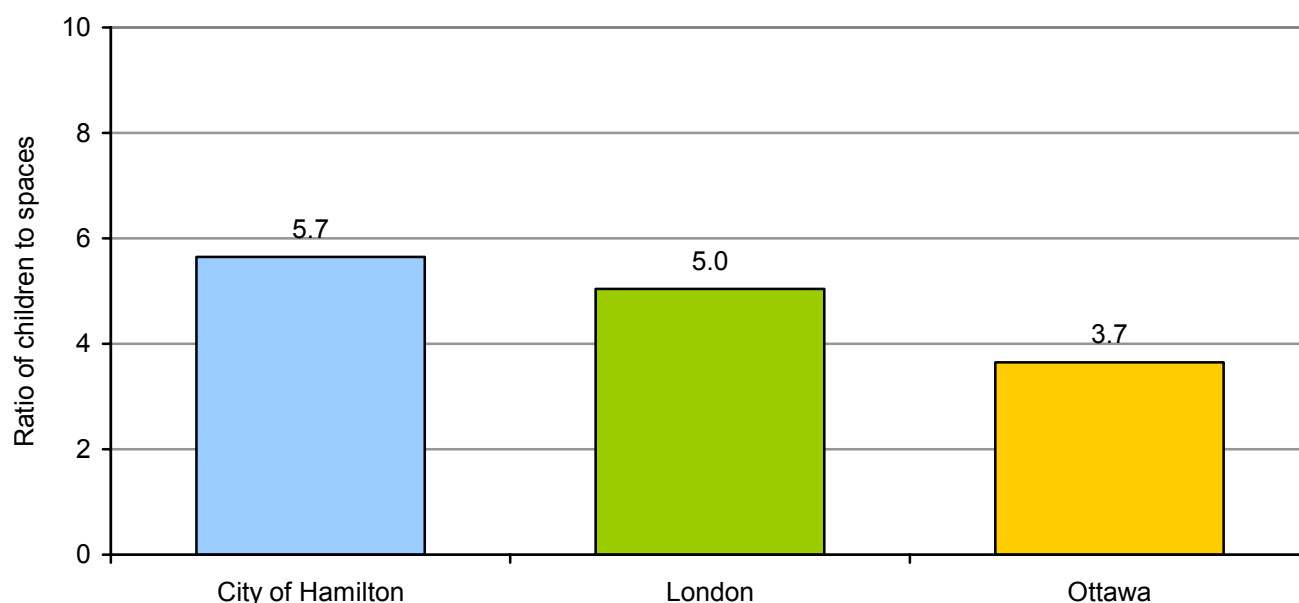
**Description:**

- The ratio of children age 0 to 12 years in families with incomes below the low income cut-off (LICO) to subsidized child care spaces.
- Availability of child care facilities to low-income families is one factor affecting quality of life and freedom to earn a living in many such families.

**Key Message:**

- In 2001, there were 5.6 children from families below LICO to each subsidized child care space in the City of Hamilton.
- In 2001, the ratio of children aged 0 to 12 years to child care spaces was higher in the City of Hamilton than in Ottawa or in London in 2002. This translates to a higher demand for subsidized child care spaces in the City of Hamilton than in Ottawa or London.

**Ratio of children age 0 to 12 years in families with incomes below low income cut-off (LICO) to subsidized child care spaces, City of Hamilton and Ottawa 2001, London, 2002**



*Source: Federation of Canadian Municipalities Survey Database 2003, Statistics Canada, 2001 Census (London data are for 2002)*

**Limitations:**

- The ratio of children to child care spaces as presented here may be influenced by the prevalence of low-income families in the population of any city.

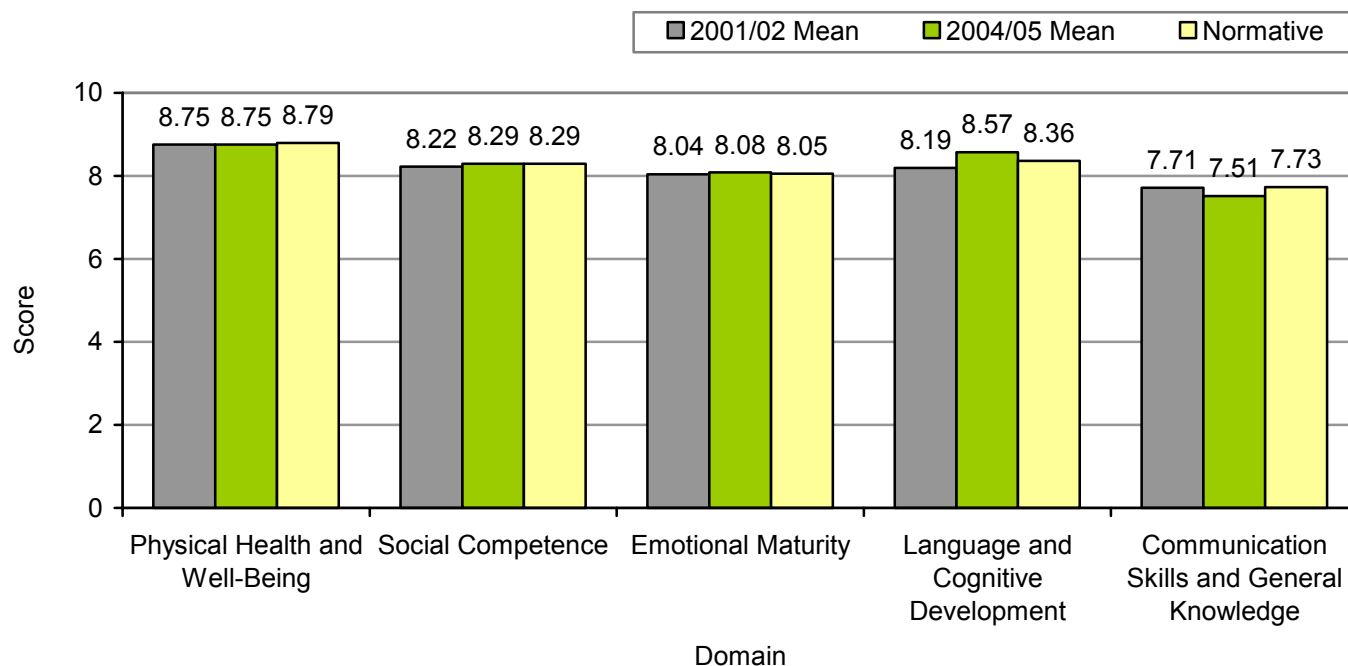


## EARLY DEVELOPMENT INSTRUMENT (EDI)

- Description:**
- The Early Development Instrument (EDI) is a diagnostic tool developed to measure a child's school readiness to learn. The tool is a checklist about the behaviours and developmental characteristics of children within the classroom and summarizes information by five domains, expressed as the percentage of children scoring below Ontario's 10th percentile cut-offs for each domain. These domains include: Physical health and well-being; Social Competence; Emotional Maturity; Language and Cognitive Development; Communication Skills and General Knowledge.
  - The normative scores in the graph are derived from a "Gold Standard" sample of 116,860 children who do not have "Special Needs" or missing data in key categories. Children with "Special Needs" include children who need special assistance due to chronic medical, physical or mental disabling conditions.
  - Investments in early childhood development can help to support young children's school readiness to learn thereby positively affecting health, well-being and competence across the balance of the life course.

- Key Message:**
- When assessed using the EDI, children in the City of Hamilton score lower in Communication Skills & General Knowledge and higher in Language & Cognitive Development than the national normative scores for these domains.
  - The 2001/02 and 2004/05 Early Development Instrument (EDI) results provide reliable baseline scores for assessing how children in the City of Hamilton are doing before the implementation of the Best Start program. This baseline can be used as a comparison with future rounds of EDI to assess the success of interventions introduced that should better support young children's school readiness to learn.

**Average Early Development Instrument (EDI) Scores for Children in the City of Hamilton, 2001/02, 2004/05**



Source: *Early Development Instrument (EDI), City of Hamilton, 2005*

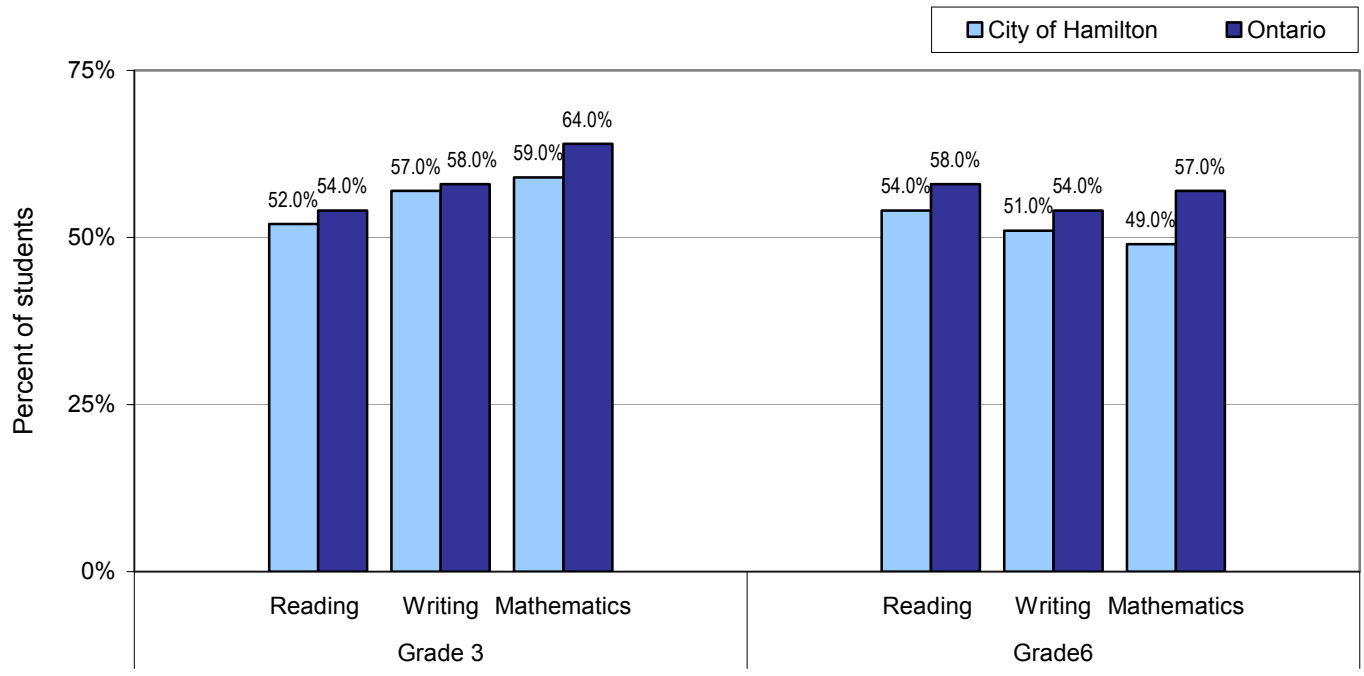
- Limitations:**
- Results from the EDI must be used in the context of other socio-economic and health measures.



## CHILDREN ACHIEVING EDUCATIONAL STANDARDS

- Description:**
- The proportion of grade 3 and grade 6 students in the Hamilton-Wentworth district school boards performing at or above provincial Education Quality and Accountability Office (EQAO) target standards in the 2003-2004 school year examinations.
  - The data represents the combined performance of the Hamilton-Wentworth District School Board and the Hamilton-Wentworth Catholic District School Board.
- Key Message:**
- In the Hamilton-Wentworth district school board area, a higher proportion of grade 3 students performed at or above the target standard in each of the three subject areas of reading, writing and mathematics than grade 6 students.
  - The proportion of grade 3 and grade 6 students performing at or above the target standard in reading, writing and mathematics was lower in the Hamilton-Wentworth District School Board area than Ontario

**Grade 3 and grade 6 students at or above EQAO standard, City of Hamilton and Ontario, 2003-04**



Source: Data compiled from Education Quality and Accountability Office (EQAO) reports for Hamilton Wentworth Public and Catholic District School Boards, 2003-2004



### CHILDREN HAVING DENTAL NEEDS

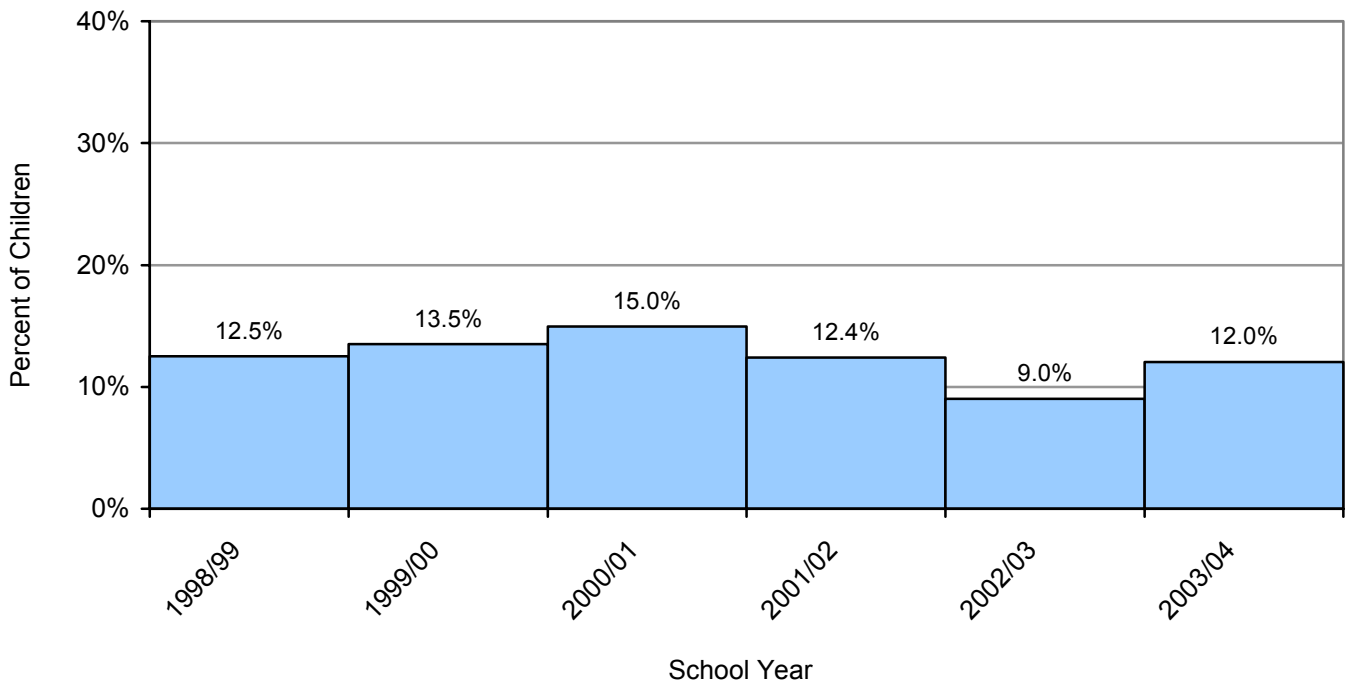
**Description:**

- The proportion of children 5 years of age who have been identified as eligible for the Child in Need of Treatment (CINOT) program which provides dental care to children of low income families. CINOT provides basic urgent dental care to children screened at school by dental professionals.
- Healthy baby teeth are important for eating, smiling, talking and keeping a place for adult teeth.
- All schools in the City of Hamilton were administered the survey.

**Key Message:**

- In 2003/04, 12.0% or 5 children 5 years of age were identified as eligible for the Child in Need of Treatment (CINOT) program.
- The proportion of 5 year olds identified as CINOT eligible increased in 2003/04, after having decreased for the previous two years.

**Children 5 years of having CINOT Needs; City of Hamilton; School Years 1998/99 to 2003/04**



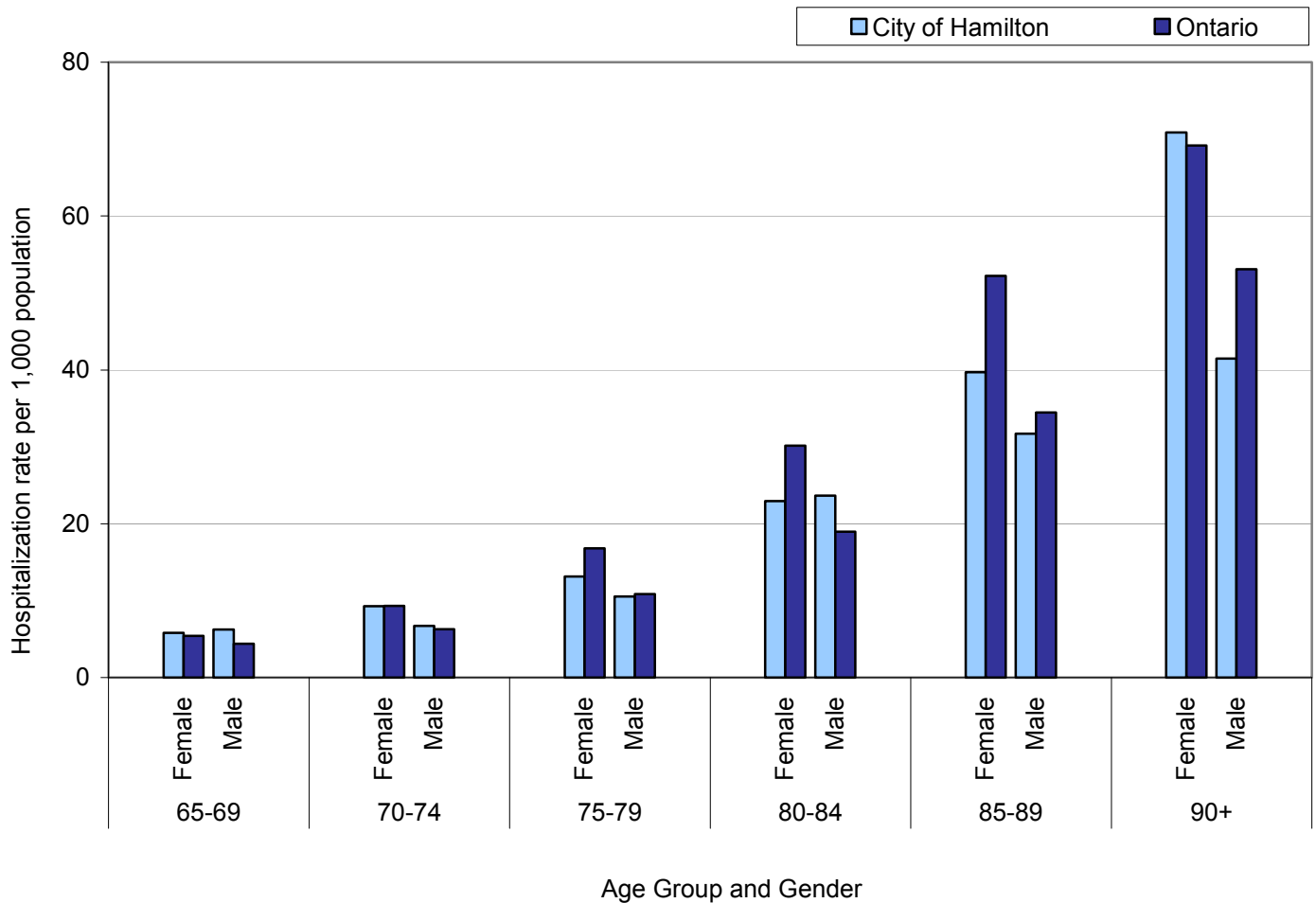
Source: City of Hamilton, Dental Indices Survey, 2003 and 2004.



## HOSPITALIZATION DUE TO FALLS AMONG SENIORS

- Description:**
- The number of persons requiring hospitalization due to falls per 1,000 population.
  - Falls are a serious health concern for older people because they frequently result in injuries that require hospitalization and can lead to long-term activity limitation.
- Key Message:**
- The hospitalization rate for falls among seniors in the City of Hamilton increased with age for both males and females. However, in most age groups, rates for females were higher than for males.
  - Hospitalization rates for falls among females aged 75 to 89 years in the City of Hamilton were lower than the Ontario rate, while the rate for males aged 80 to 84 years in the City of Hamilton were higher than the Ontario rate.
  - Adults age 80 years and older had the highest risk of hospitalization due to falls.

**Hospitalization rate per 1,000 due to falls, among seniors age 65 years and older, by age group and gender, City of Hamilton and Ontario, 2003/04**



Source: Provincial Health Planning Database (PHPDB), Ministry of Health and Long-Term Care, 2005

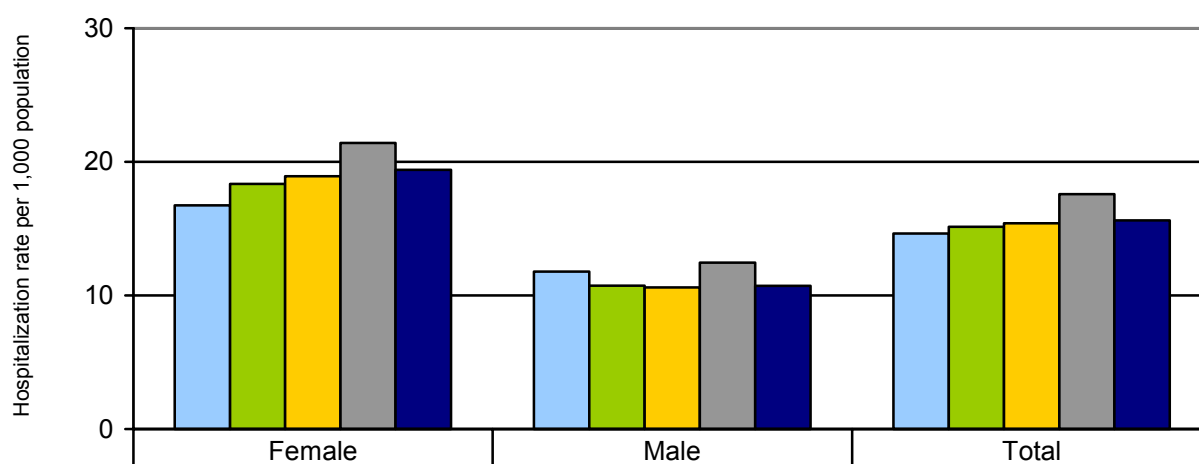


## HOSPITALIZATION DUE TO FALLS AMONG SENIORS – PEER COMPARATORS

- Description:**
- The number of persons requiring hospitalization due to falls per 1,000 population.
  - Falls are a serious health concern for older people because they frequently result in injuries that require hospitalization and can lead to long-term activity limitation.

- Key Message:**
- There were fewer hospitalizations due to falls among females age 65 years and older in the City of Hamilton than in the select comparator cities and Ontario.
  - The hospitalization rate due to falls among males age 65 and older in the City of Hamilton was higher than Middlesex-London, Ottawa and Ontario.
  - The overall hospitalization rate due to falls among seniors age 65 and older in the City of Hamilton was lower than the select comparator cities and Ontario.

**Hospitalization rate per 1,000 due to falls, among seniors age 65 years and older, by gender, City of Hamilton, select cities and Ontario, 2003/04**



	Female	Male	Total
City of Hamilton	16.8	11.8	14.6
Middlesex-London	18.4	10.7	15.1
Ottawa	18.9	10.6	15.4
Windsor-Essex	21.4	12.5	17.6
Ontario	19.4	10.7	15.6

Source: Provincial Health Planning Database (PHPDB), Ministry of Health and Long-Term Care, 2005



## 9.0 PREVENTION AND CONTROL OF INFECTIOUS DISEASES

Infectious diseases are illnesses caused by living organisms or the toxins they produce. They are spread directly from an infectious person, animal or environmental source. Sometimes spread occurs indirectly by contaminated animals or objects.

Infectious diseases are an important cause of both illness and death in the community. Infectious diseases represent ongoing challenges to public health's role as new organisms emerge as causes of disease. Public health professionals must remain vigilant to ensure that systems are in place that are capable of controlling all infectious diseases.

In Ontario, the Health Protection and Promotion Act (HPPA) provides legal framework that requires the reporting of infectious diseases. Regulations list specific diseases and conditions that are to be reported and the current list includes 69 communicable diseases that must be reported.

The Mandatory Health Programs and Services Guidelines (MHPSG) for the Control of Infectious Diseases includes programs for safe food and water, sexually transmitted disease (STD) including AIDS, tuberculosis, rabies and vaccine preventable diseases for which there are Ministry of Health immunization programs. In addition this section includes requirements for assuring that effective infection control programs are in place in institutions, day care centers and personal service settings.

The primary goal for the prevention and control of infectious diseases is to reduce or eliminate infectious diseases. This includes the following goals as per the MHPSG:

- To reduce the incidence of infectious diseases of public health importance
- To improve the health of the population by reducing the incidence of food-borne illness
- To reduce transmission of infectious diseases
- To prevent the occurrence of rabies in humans
- To reduce the incidence of water borne illness in the population
- To reduce the incidence of and complications from all sexually transmitted diseases (STD) including HIV/AIDS
- To reduce the incidence of tuberculosis
- To reduce the incidence of vaccine preventable diseases

In order to meet the above program goals, staff in the Health Protection Branch of the Public Health and Community Services Department are involved in the following activities and services:

- Investigations and case management of all reported cases and their contacts
- Immunization clinics in schools and in the community
- Collect immunization information for children enrolled in schools or daycares and enforce the legislated vaccination requirements
- Distribute and ensure the safe handling of vaccines
- Provision of sexual health counselling, low cost birth control, PAP tests, anonymous HIV tests, and treatments for STD
- Provision of treatment and case management of individuals with active and inactive tuberculosis
- Community and institutional outbreak response and management
- West Nile Virus surveillance and control
- Safe food and water inspections
- Response to animal bite complaints and ensuring that pet dogs and cats are vaccinated against rabies
- Participate in the development of the provincial and local plan for pandemic influenza
- Provide 24/7 service for the response to reports of reportable infectious diseases



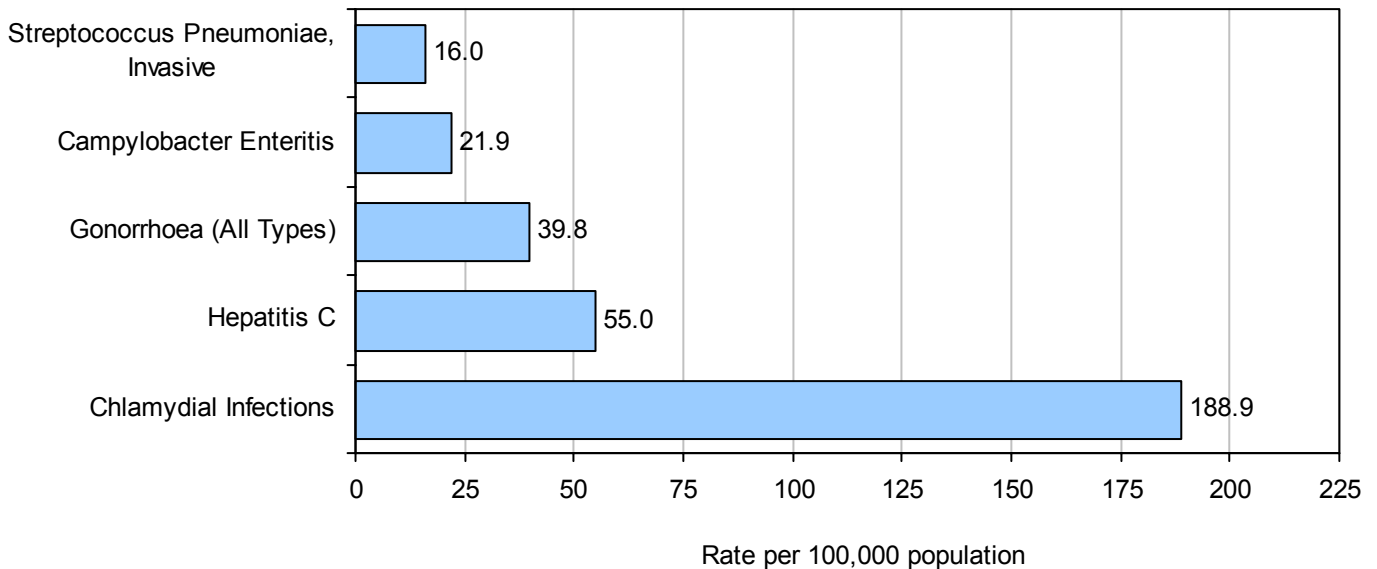
## INFECTIOUS DISEASES

- Description:**
- There are a number of infectious diseases that must be reported to public health units by healthcare professionals and laboratories, as outlined in the Health Protection and Promotion Act.
  - These diseases are reported on a case by case basis and, here, are displayed as a rate per 100,000 population per year in the City of Hamilton.

- Key Message:**
- In 2004, of the five diseases with the highest number of new cases in the City of Hamilton, Chlamydia was the disease with the highest incidence rate, with approximately 189 cases per 100,000 population.
  - Campylobacter and Invasive Pneumococcal Disease (IPD) infections showed the lowest incidence rates of the top five diseases, with approximately 22 and 16 cases per 100,000 population

### *Top five incident infectious diseases, City of Hamilton, 2004*

Infectious disease



*Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005*

- Limitations:**
- These data are based on confirmed laboratory tests and do not represent all cases. Underreporting by cases, inadequate test samples, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the laboratory data.



### INFLUENZA CASES BY STRAIN

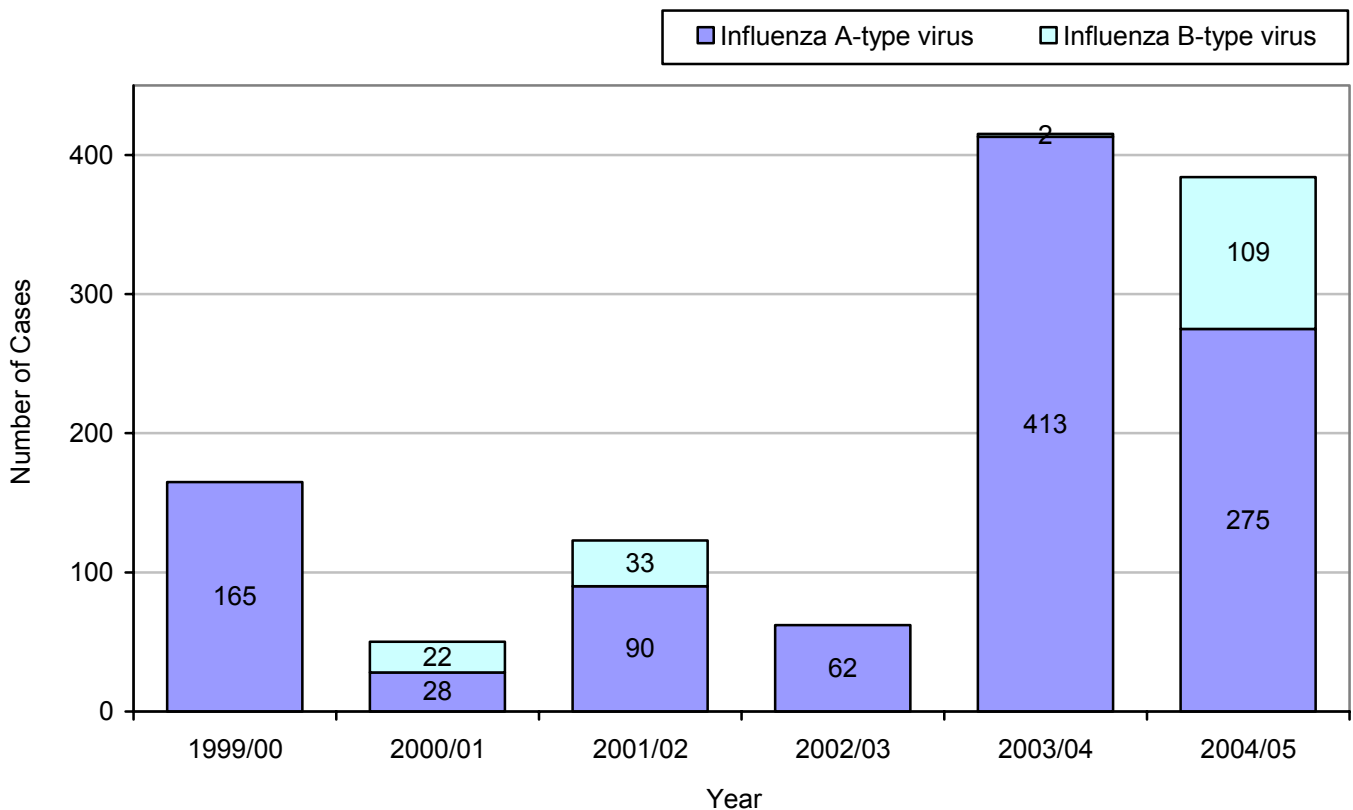
**Description:**

- The number of cases of Influenza A and B reported in the City of Hamilton during the given flu season from September to April.
- Influenza is a common viral infection, which tends to cause illness between September and April. There are two types of influenza; A and B. Both types are covered in the vaccine but may not have an exact strain match. Influenza A can be treated with anti-viral medication.
- It is important to monitor influenza cases and rates to assist with disease prevention and control.

**Key Message:**

- In recent years, influenza A has been the more common of the two major types of influenza.
- In the 2003/2004 season the incidence of influenza was significantly higher than in the previous four years. However, the incidence of influenza in the 2004/2005 season was slightly lower than in the 2003/2004 season.
- The emergence of Severe Acute Respiratory Syndrome (SARS) in 2003 led to an increase in the number of laboratory tests requested by physicians for cases of influenza-like illness. This is likely to have contributed to the increase in the number of influenza cases detected during the last two influenza seasons.

**Number of influenza cases by strain, City of Hamilton, 1999/00-2003/04**



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005

**Limitations:**

- These data are based on confirmed laboratory tests and do not represent all cases. Underreporting by cases, inadequate test samples, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data.

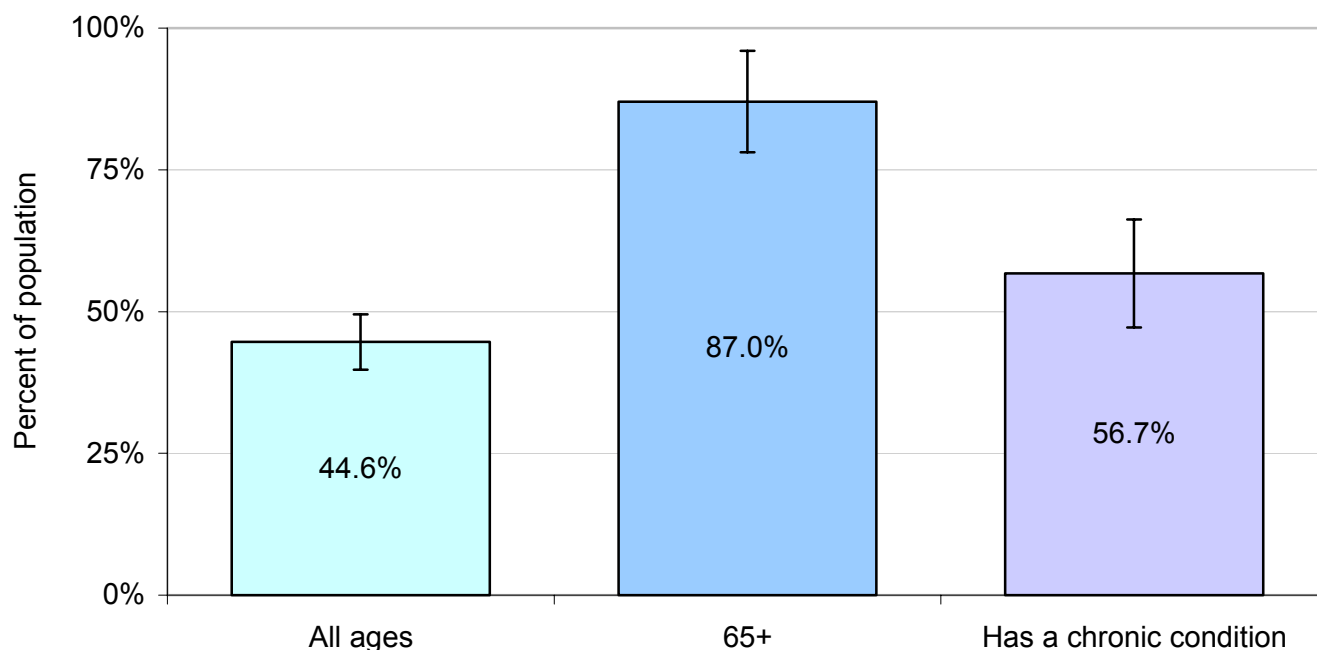


## IMMUNIZATION FOR INFLUENZA

- Description:**
- Population immunized for influenza in the 2004/05 influenza season (i.e. those surveyed January to April 2005 who had a flu shot since September 2004).
  - Immunization, including its promotion, provision of vaccine (either directly through clinics or indirectly through other health care providers), and monitoring of immunization rates are key public health functions.
  - High risk groups and thus those most recommended for vaccination, include children aged 6-23 months, those over age 65, and those who are immuno-compromised (this is measured by examining those with chronic conditions). In addition, health care workers and other workers who come into contact with an individual in a high risk group should be vaccinated.

- Key Message:**
- Nearly half (44.6%) of the population in the City of Hamilton reported that they had received a flu shot for the 2004/2005 influenza season.
  - Fifty seven percent of those who have a chronic condition and 87% of those who are age 65 years of or older were immunized against influenza in the 2004/2005 season.

**Population who have received a flu shot since September 2003 by group, based on vulnerability, City of Hamilton, 2004**



I - represents the 95% confidence intervals. If the survey was expanded from this sample to a larger sample, the result would be expected to fall between the lower and upper limits 95% of the time.

Source: Rapid Risk Factor Surveillance System (RRFSS), City of Hamilton, 2004

- Limitations:**
- These data are based on questions only asked of Hamilton population age 18 years and over. The results provided are based on self-reporting elicited through a telephone survey which was administered only in the English language.

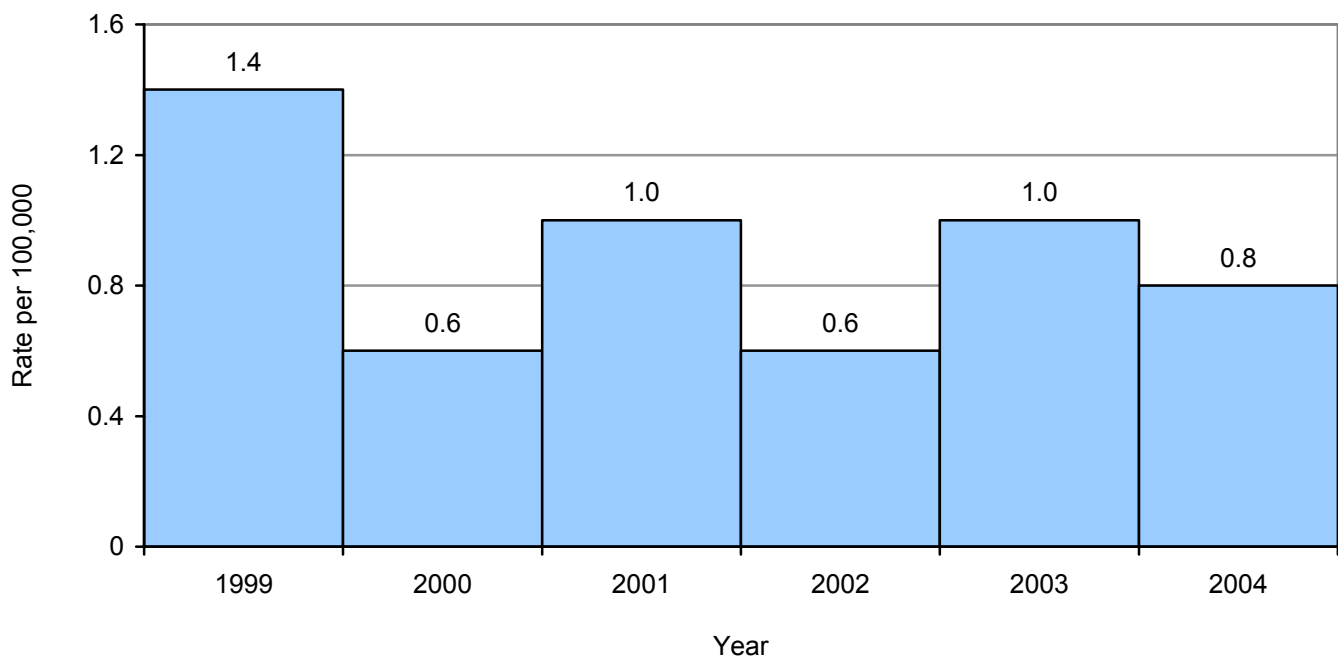


## HEPATITIS B

- Description:**
- The number of cases of acute Hepatitis B per 100,000 population, age-standardized, per 100,000 population reported per year to the public health department.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Hepatitis B is a blood-borne viral infection primarily affecting the liver. The majority of acute cases do not lead to chronic infection, however, some do.
  - Because of the severity and potential longevity of this disease, one of the goals of public health is to follow up all laboratory diagnosed cases to ensure they are aware of their disease status, are receiving available treatment and are taking steps to prevent further spread of the disease to other persons.

- Key Message:**
- The incidence rate of hepatitis B declined from 1.0 case per 100,000 population in 2003 to 0.8 case per 100,000 population in 2004.

### *Age-standardized rate of acute-hepatitis B, City of Hamilton, 1999-2004*



*Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005*

- Limitations:**
- These data are based on confirmed laboratory tests and do not represent all cases. Underreporting by cases, inadequate test samples, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data.

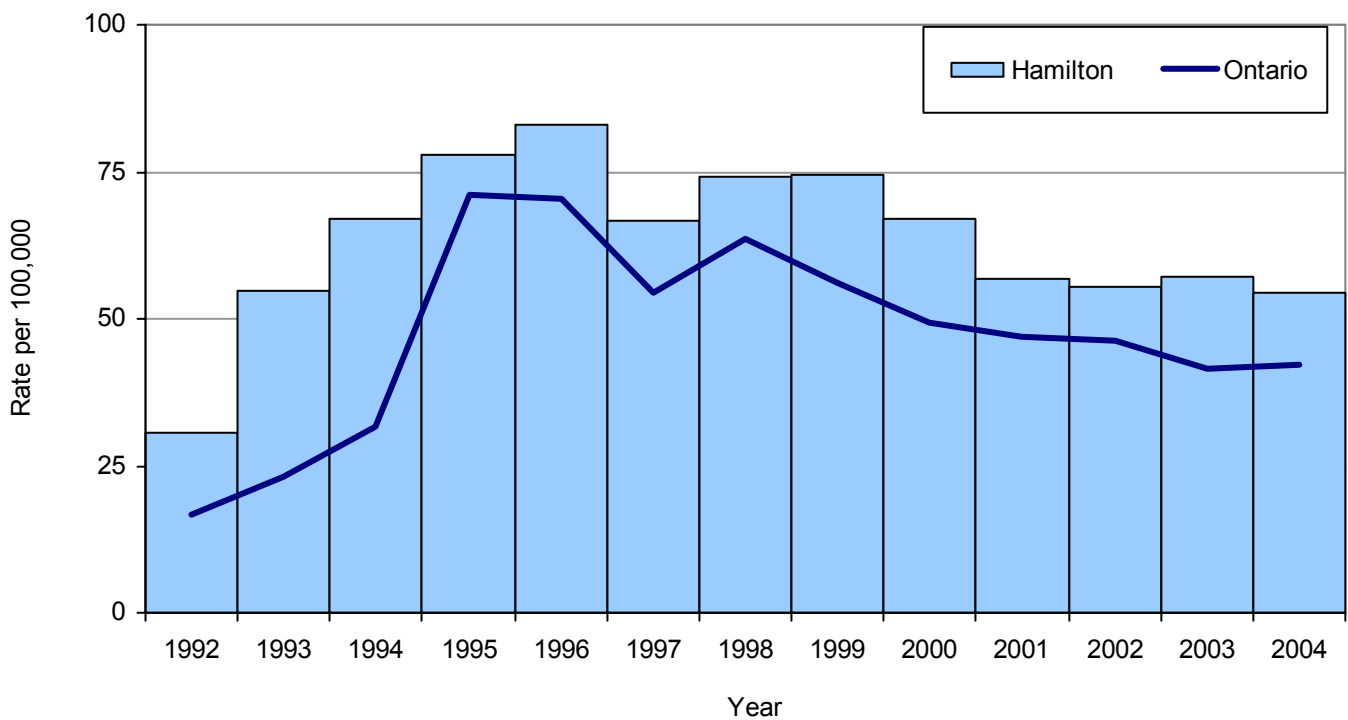


## HEPATITIS C

- Description:**
- The number of cases of Hepatitis C per 100,000 population, age-standardized, per 100,000 population reported per year to the public health department.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Hepatitis C is a blood-borne viral infection primarily affecting the liver. Approximately three quarters of persons infected with the Hepatitis C virus (HCV) will develop chronic infection.

- Key Message:**
- Since 1999, when the incidence rate of hepatitis C in Hamilton peaked at 74.3 cases per 100,000 population, there has been a gradual decline in the incidence of the disease in the City of Hamilton.
  - The incidence of hepatitis decreased slightly from 56 cases per 100,000 population in 2003 to 55 cases per 100,000 population in 2004.
  - The rate of Hepatitis C has been higher in the City of Hamilton than Ontario.

**Age-standardized rate of Hepatitis C, City of Hamilton and Ontario, 1992-2004**



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005

- Limitations:**
- These data are based on confirmed laboratory tests and do not represent all cases. Underreporting by cases, inadequate test samples, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data.

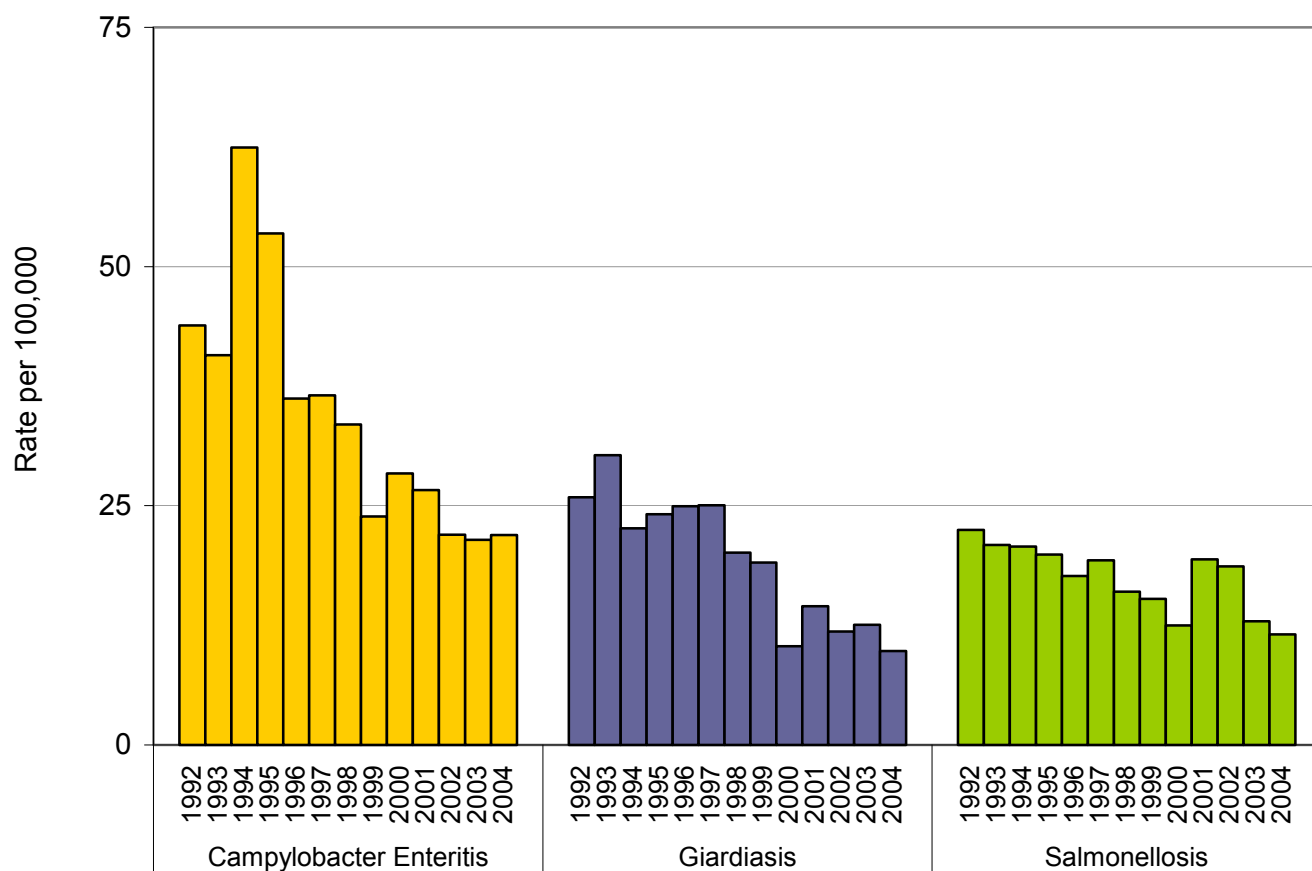


## CAMPYLOBACTER, GIARDIASIS AND SALMONELLOSIS

- Description:**
- The number of Campylobacter, Giardiasis, and Salmonellosis per 100,000 population, reported per year to the public health department.
  - Enteric diseases affect the gastrointestinal system, and transmission usually occurs through the consumption of food or water.
  - Measuring the incidence of enteric disease is one indicator of the integrity of our food and water systems, and of the food handling practices of private citizens and restaurant workers.

- Key Message:**
- There has been a general decline in campylobacteriosis, giardiasis and salmonellosis in the City of Hamilton over the past 13 years (1992-2004).
  - The incidence rate of cases of salmonellosis diagnosed per year remained approximately the same from 2002 to 2004.

### Rate of Campylobacter, Giardiasis and Salmonellosis, City of Hamilton, 1992-2004



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005

- Limitations:**
- Enteric illnesses are significantly underreported because many cases do not experience severe symptoms.

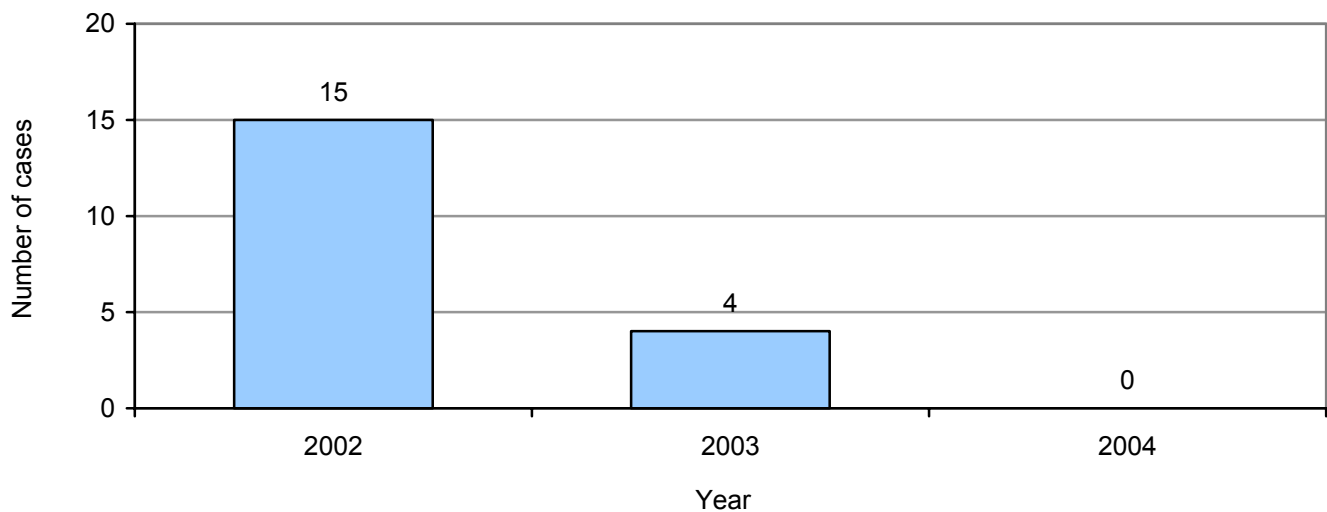


## HUMAN CASES OF WEST NILE VIRUS

- Description:**
- Passive West Nile Virus surveillance began in 2000 in the City of Hamilton. Starting in 2002, the City of Hamilton implemented an active West Nile virus surveillance program in acute care hospitals and in the community through active communication with family physicians and infectious disease practitioners.
  - The statistics below represent laboratory-confirmed cases of West Nile virus per year.

- Key Message:**
- In 2002, the City of Hamilton had 15 laboratory confirmed cases of WNV. This number dropped to 4 in 2003 and to zero cases in 2004.
  - While WNV has been present in Hamilton in birds and mosquitoes since 2001, the number of human cases has been very small.

### *Human cases of West Nile virus Infection, City of Hamilton, 2002-2004*



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2004.

- Limitations:**
- These data are based on confirmed laboratory tests and do not represent all cases. Underreporting by cases, inadequate test samples, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data.
  - It should be noted that these results only represent those cases severe enough to seek medical attention. The actual portion of the City of Hamilton population who have ever had WNV, but were either asymptomatic, or had mild symptoms, could be much higher.

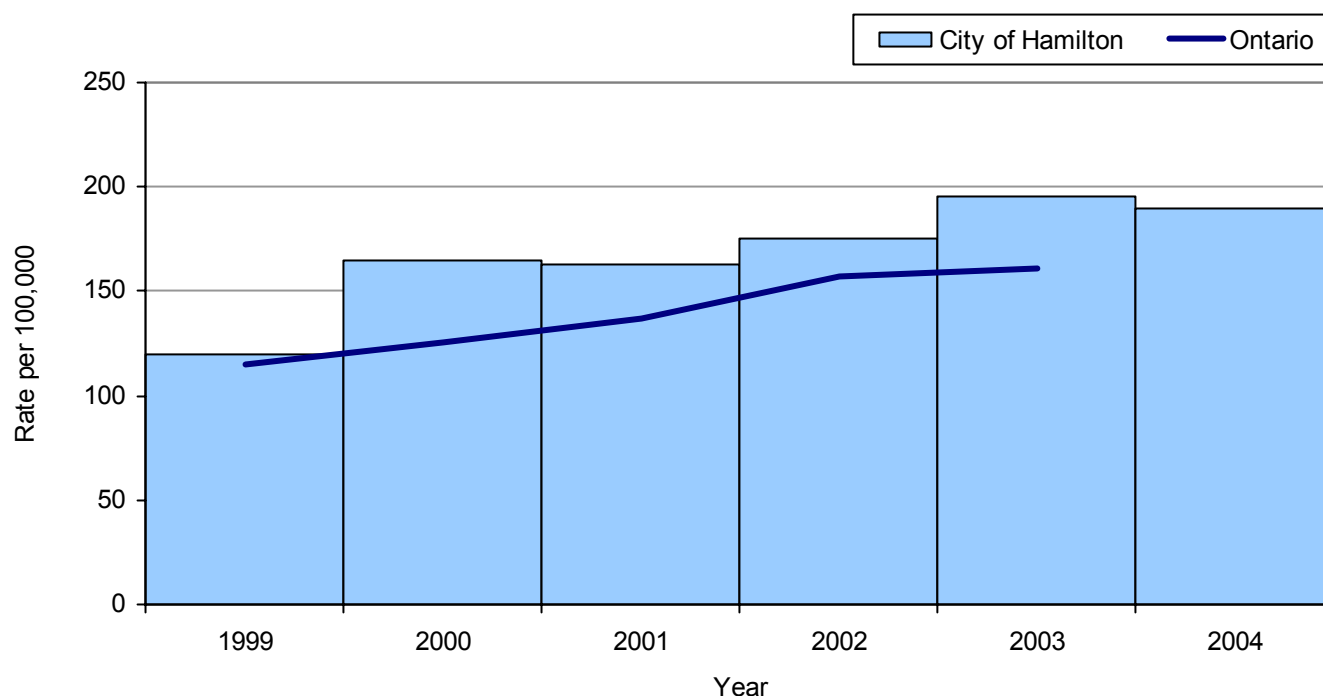


## CHLAMYDIA

- Description:**
- The number of laboratory confirmed cases of Chlamydia, age-standardized, per 100,000 population reported per year to the public health department.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Monitoring rates of sexually transmitted diseases (STD), such as Chlamydia, are indicators of unprotected sexual activity.
  - Changes in diagnostic procedures over the past decade may have lead to artifactual changes in disease occurrence.

- Key Message:**
- The rate of Chlamydia among the population in the City of Hamilton increased between 1999 and 2003.
  - The incidence of Chlamydia was consistently higher in the City of Hamilton than in Ontario between 1999 and 2003.

### Age-standardized rate of Chlamydia, City of Hamilton and Ontario, 1999-2003



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2004.

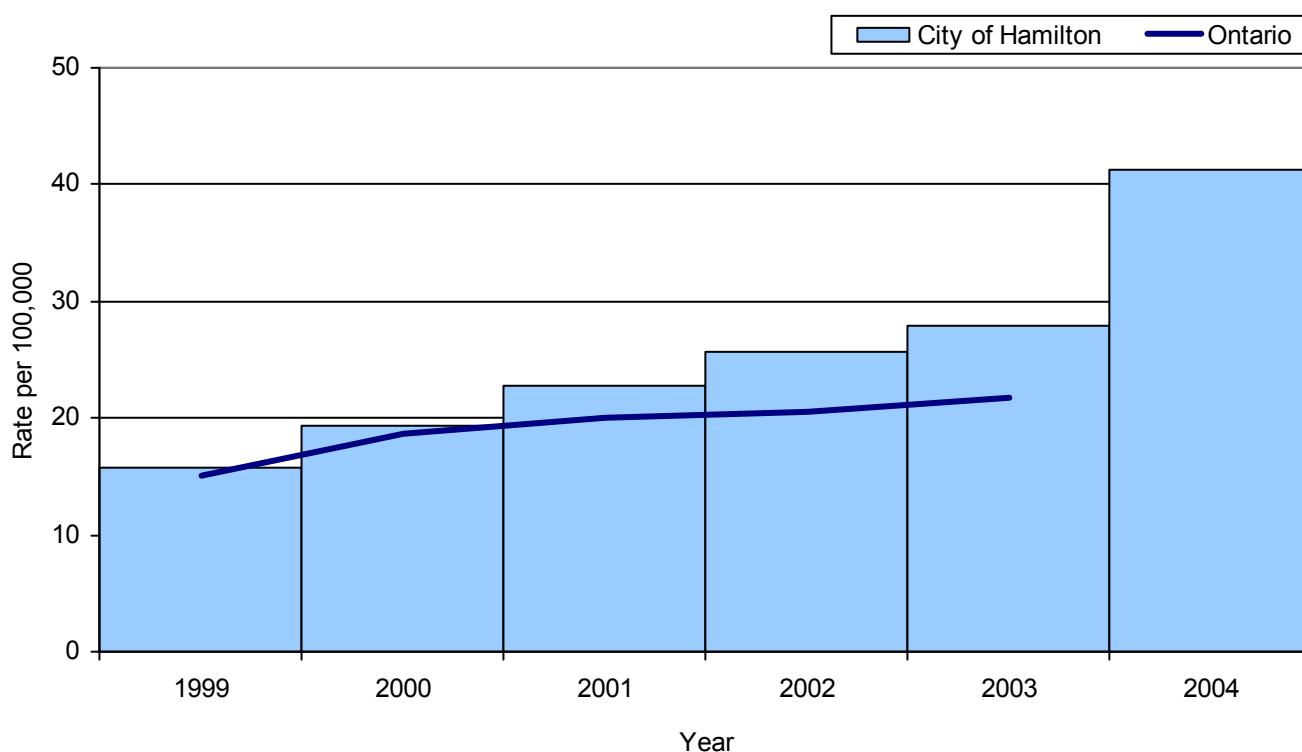
- Limitations:**
- The above infectious disease data is primarily based on confirmed laboratory tests, and does not represent all cases. Underreporting by the cases, an inadequate sample for testing, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data compared to the actual cases.



## GONORRHOEA

- Description:**
- The number of laboratory confirmed cases of Gonorrhoea, age-standardized, per 100,000 population reported per year to the public health unit.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Monitoring rates of sexually transmitted diseases, such as Gonorrhoea, are indicators of unprotected sexual activity.
  - Changes in diagnostic procedures over the past decade may have lead to artifactual changes in disease occurrence.
- Key Message:**
- Since 1999, there has been a consistent increase in the incidence of gonorrhoea among the population in the City of Hamilton and in Ontario.
  - Although both incidence rates are increasing, the incidence of Gonorrhoea has been consistently higher in the City of Hamilton than in Ontario

**Age-standardized rate of Gonorrhoea, City of Hamilton and Ontario, 1999-2003**



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2004.

- Limitations:**
- The above infectious disease data is primarily based on confirmed laboratory tests, and does not represent all cases. Underreporting by the cases, an inadequate sample for testing, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data compared to the actual cases.

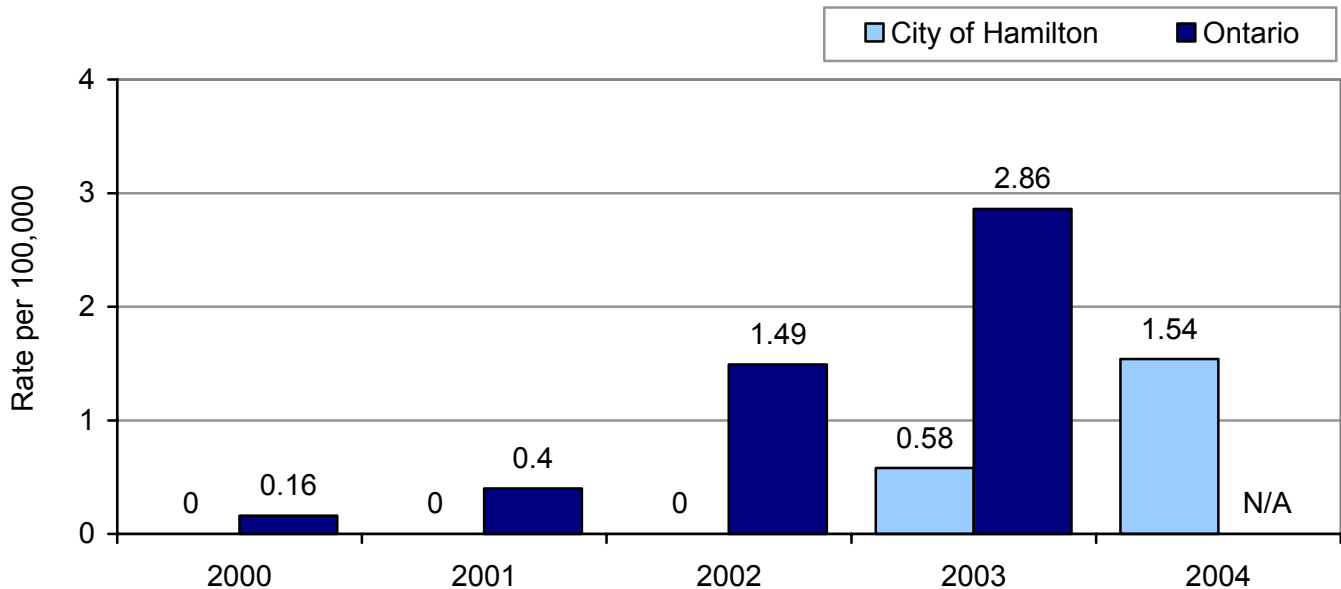


## INFECTIOUS SYPHILIS

- Description:**
- The number of laboratory confirmed cases of Infectious Syphilis, age-standardized, per 100,000 population reported per year to the public health unit.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Monitoring rates of sexually transmitted diseases, such as Infectious Syphilis, are indicators of unprotected sexual activity.
  - Changes in diagnostic procedures over the past decade may have lead to artifactual changes in disease occurrence.
  - Syphilis is the least often reported STD, when compared to Chlamydia and Gonorrhoea.

- Key Message:**
- The age-standardized rate of infectious syphilis in the City of Hamilton has been consistently lower than the rate in Ontario between 2000 and 2003. While the provincial rates have been experiencing a rise in infection syphilis between 2001 and 2003, no comparable rise was experienced in the City of Hamilton during the same time period.

### Age-standardized rate of infectious syphilis, City of Hamilton and Ontario, 2000-2004



N/A - data not available

Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2004.

- Limitations:**
- The above infectious disease data is primarily based on confirmed laboratory tests, and does not represent all cases. Underreporting by the cases, an inadequate sample for testing, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data compared to the actual cases.
  - Rates are unstable due to low numbers of cases.

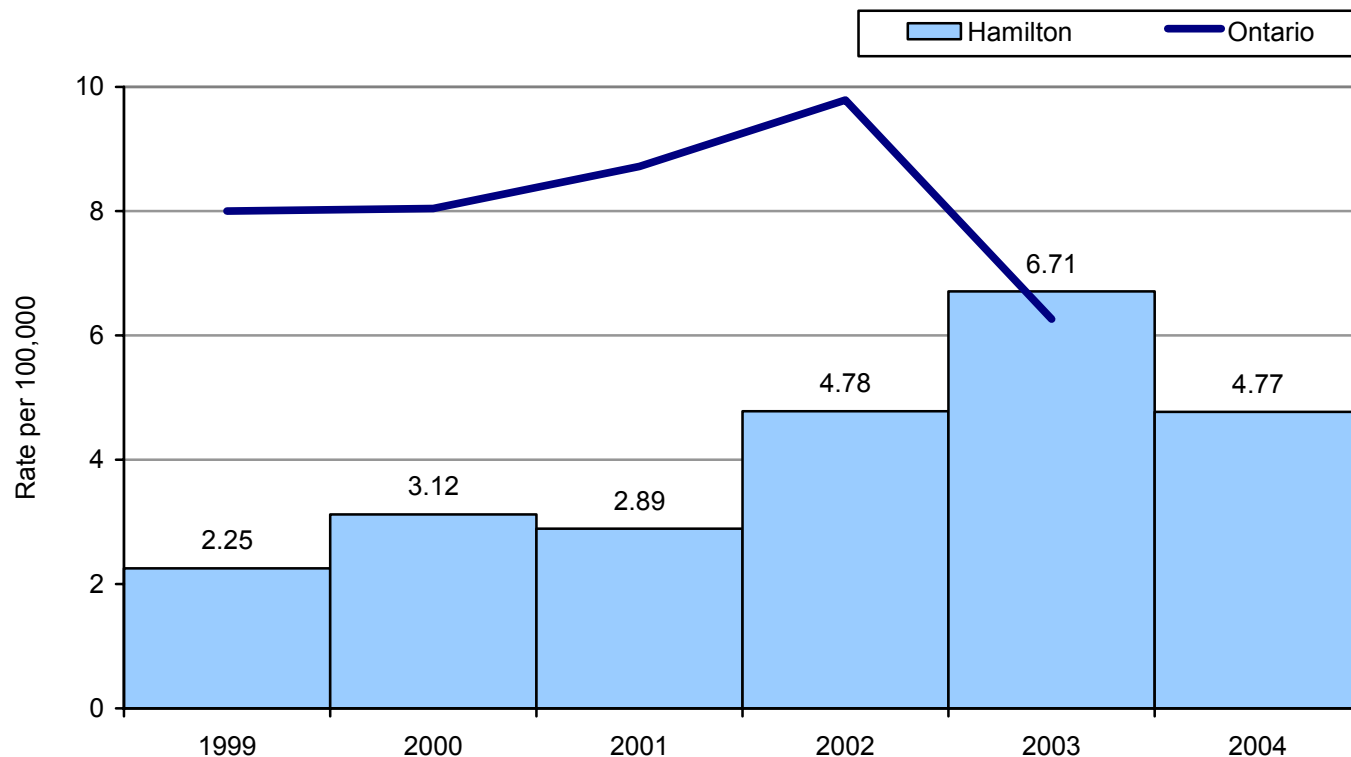


## HUMAN IMMUNODEFICIENCY VIRUS (HIV)

- Description:**
- The number of laboratory confirmed cases of Human Immunodeficiency Virus (HIV), age-standardized, per 100,000 population reported per year to the public health unit.
  - An age-standardized rate is a summary measure of a rate that a population would have if it had a standard age structure. Age-standardization is necessary for two reasons. Firstly, it minimizes the effects of varying age composition among different populations on the calculated rate. Secondly, age-standardization minimizes the effects of age as a risk factor for disease on the calculated rate.
  - Rates of sexually transmitted diseases are indicators of unprotected sexual activity.
  - Most adults and adolescents infected with HIV remain symptom free for extended periods. Eventually, HIV attacks the immune system and develops into Acquired Immunodeficiency Syndrome (AIDS), which eventually develops in almost all HIV-infected persons.

- Key Message:**
- The age-standardized rate of HIV in the City of Hamilton 4.8 cases per 100,000 population.
  - Data for Ontario in 2004 is currently unavailable.

**Age-standardized rate of HIV, City of Hamilton and Ontario, 1999-2004**



Source: Reportable Diseases Information System (RDIS), City of Hamilton, 2005.

- Limitations:**
- The above infectious disease data is primarily based on confirmed laboratory tests, and does not represent all cases. Underreporting by the cases, an inadequate sample for testing, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data compared to the actual cases.



## TUBERCULOSIS (TB)

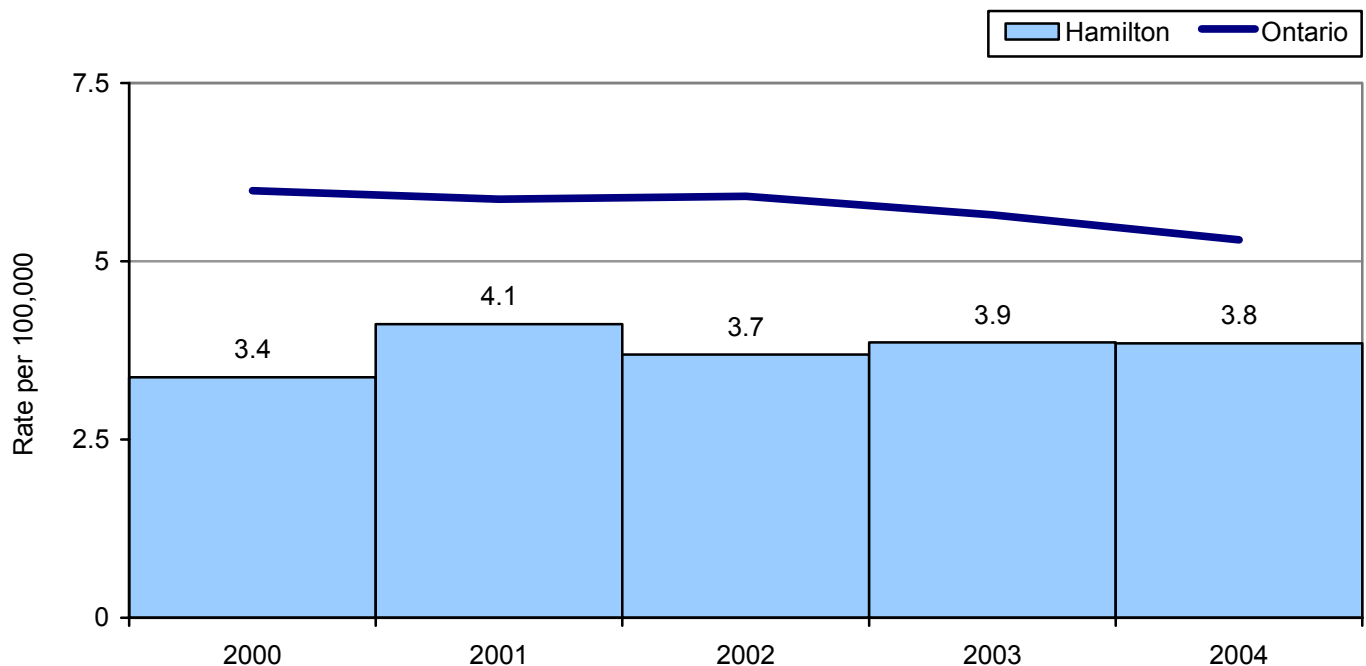
**Description:**

- Over the last few decades great strides have been made in preventing and controlling tuberculosis (TB), a serious bacterial infection which primarily infects the lung. With TB, it is important to monitor both active cases including those which are multi-drug resistant TB (i.e. a strain of TB that is resistant to the drugs isoniazid and rifampin, two drugs commonly used to treat TB). In addition, it is important to capture those individuals who have inactive TB disease. There are people who have been infected but not yet contagious.

**Key Messages:**

- Active Tuberculosis rates have remained relatively constant since 2000.
- In 2004, there were 3.8 cases of tuberculosis (TB) per 100,000 population in the City of Hamilton. This translates to approximately 20 cases of TB.

**Rate of Tuberculosis (TB) Cases, City of Hamilton and Ontario, 2000-2004**



Source: Reportable Disease Information System (RDIS), City of Hamilton, 2004

**Limitations:**

- The above infectious disease data is primarily based on confirmed laboratory tests, and does not represent all cases. Underreporting by the cases, an inadequate sample for testing, and limitations in the sensitivity of the diagnostic laboratory test are three key factors which affect the representativeness of the lab data compared to the actual cases.



## 10.0 HEALTH AND THE ENVIRONMENT

The City of Hamilton's Roadmap to Sustainability highlights the need to preserve the environment and basic health of our citizens. Two priorities that have been identified through this initiative include: to reduce environmental impacts to air, land and water, and to protect and enhance ecosystems. This section of the report assesses Safe Water Mandatory Program and Air Quality in the City of Hamilton, two components of the natural environment that greatly impact on the health of the population in the City of Hamilton.

The term Environmental Health is used to refer to environmental factors that can impact human health. While the scope of these factors is broad (ranging from Food Safety to Insect/Animal Vector Control), this chapter specifically focuses on indicators related to Air and Water Quality.

In other sections of this report, the authors have compared the City of Hamilton with Middlesex-London, the City of Ottawa, and Windsor-Essex. These comparison health regions were chosen because they are socioeconomically similar to the City of Hamilton and, as such, serve as a means for controlling for socioeconomic characteristics related to health outcomes. Socioeconomic characteristics, however, have little relevance when evaluating environmental health outcomes because these outcomes are more directly impacted by factors related to the geography of the area. Air and Water Quality indicators for the City of Hamilton are, therefore, examined over time.

### Water Quality

The consequences of exposure to microbial contaminants in water related to adverse health outcomes are likewise well-documented and reasonably understood. The most prominent recent example of such an exposure is the outbreak of *E. coli* O157:H7 infection associated with the drinking water supply in Walkerton, Ontario in 2000. However, adverse exposures can also be linked to water supplies other than those used for drinking and can involve chemical as well as biological contaminants.

Two indicators of adverse water quality are discussed in this chapter: the number of Boil Water Advisories (BWA) and Drinking Water advisories (DWA) issued in the City of Hamilton, and the number of days "Beaches are Open" recorded for local recreational water areas. BWA and DWA data represent the number of situations where the Medical Officer of Health was of the opinion that the potential existed for possible exposure to unsafe drinking water conditions, in the form of chemical or biological contaminants. Beach closure data considers potential exposure to micro organisms in recreational water. When information displayed in this indicator is considered from a broader Determinants of Health perspective, it also speaks to public access to recreational facilities, which has implications for tourism and recreational activities along Hamilton Harbour.

### Air Quality

Adverse health impacts associated with exposure to contaminants in air are diverse and well known. These include correlations in observed hospital admission rates for respiratory illnesses with levels of specific outdoor air pollutants, and increased rates of lung cancer among non-smokers exposed to indoor environmental tobacco smoke.

This chapter focuses on three indicators of outdoor air quality: the average annual level of respirable particulate matter (PM<sub>2.5</sub>), number of hours that air levels of ozone exceed 50 parts per billion (ppb) each year and the average annual level of nitrogen dioxide. These indicators (described in more detail below) were selected because their relationship to adverse health effects has been well-documented and they are monitored locally by the Ontario Ministry of Environment.



## DRINKING WATER AND BOIL WATER ADVISORIES

- Description:**
- The number of Drinking Water Advisories (DWAs) and Boil Water Advisories (BWAs) issued by the Medical Officer of Health to owners/operators of drinking water systems that are regulated under the Safe Drinking Water Act.
  - Depending on the contaminant present, BWAs are issued for bacterial presence while DWAs are issued for chemical presence in drinking water supplies.

- Key Message:**
- In 2004, a total of 30 Drinking Water and Boil Water Advisories were issued by the Medical Officer of Health to various community waterworks owners/operators throughout the City of Hamilton.
  - In 2004, 29 BWAs and one DWA were issued. Of the boil water advisories issued, 11 were issued to municipally owned/operated non-residential drinking water systems. One DWA was issued to a municipal residential water supply.

### ***Number of Drinking Water and Boil Water Advisories, City of Hamilton to Ontario, 2004***

Type of Water System	Number of BWAs	Number of DWAs	
Municipal Residential	2	1	
Municipal Non-Residential	11	0	
Non-Municipal Residential	10	0	
Non-Municipal Non-Residential	6	0	
<b>Total</b>	<b>29</b>	<b>1</b>	<b>30</b>

*Source: Health Protection Branch, PHCS, City of Hamilton, 2004.*



## DAYS BEACHES ARE OPEN

- Description:**
- Total number of days of beach openings during the sampling period in 2004.
  - It is important to track “Beaches Open” days because this provides information on the quality of life in our community as well as the health of our local environment.
  - Lake Ontario beaches are reported separately from the Hamilton Harbour beaches.

- Key Message:**
- In 2004, the percentage of Lake Ontario beaches in the City of Hamilton that were open during the sampling season ranged from 87% to 93%.
  - Alternatively, in 2004, the percentage of Hamilton Harbour beaches in the City of Hamilton that were open during the sampling season ranged from 7% to 20%.

### *Days the Beaches are Open, City of Hamilton, 2004*

	Sampling Period (Days)	No. of Days Open	% of Days Open
<b>3 Lake Ontario Beaches</b>			
Beach Boulevard	105	91	87
Van Wagner's	105	98	93
Confederation	105	91	87
<b>2 Harbour Beaches</b>			
Bayfront	105	7	7
Pier 4	105	21	20

*Source: Health Protection Branch, PHCS, City of Hamilton, 2005*

- Limitations:**
- This indicator discusses two beach areas that are distinctly different. The beaches are not comparable due to environment, location, and physical differences.



## ANNUAL AVERAGE NITROGEN DIOXIDE NO<sub>2</sub>

**Description:**

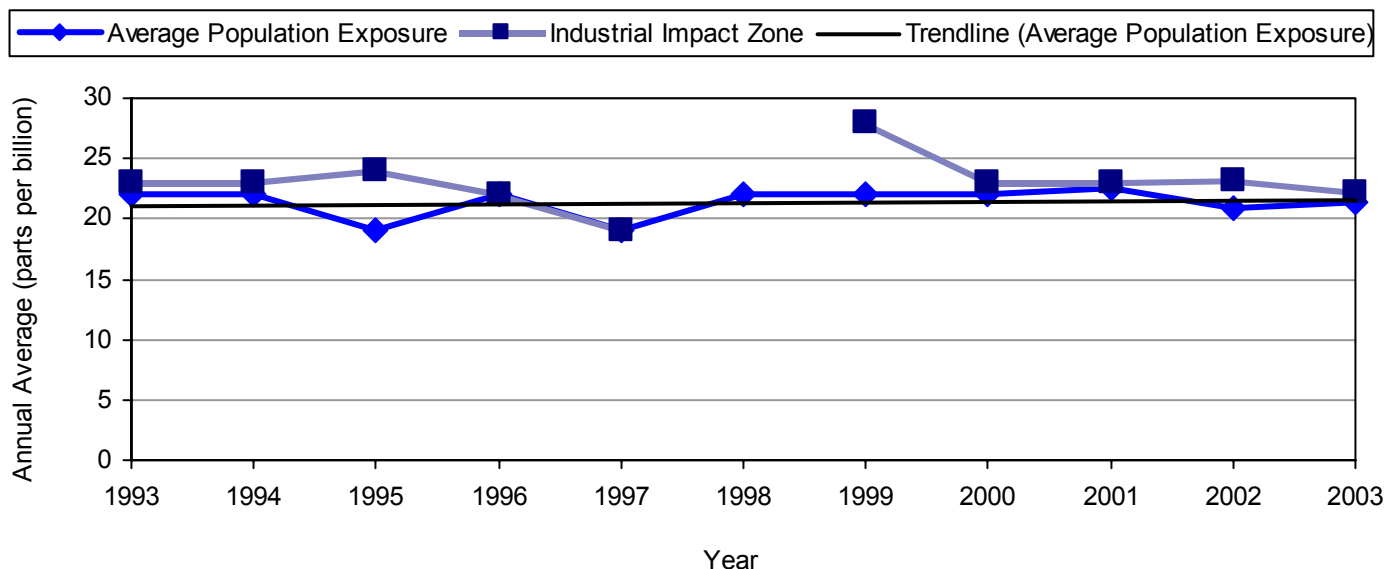
- Annual average nitrogen dioxide (NO<sub>2</sub>) exposure is a measure of the yearly average air level of NO<sub>2</sub> measured in the City of Hamilton's air in parts per billion (ppb).
- It is important to monitor air levels of NO<sub>2</sub> because it is responsible for a significant burden of illness in the City of Hamilton. Air pollution, including NO<sub>2</sub> and other air pollutants, will result in approximately 290 premature deaths and 2840 emergency room visits this year.

*Source: Ontario Medical Association (OMA) 2005. The Illness Costs of Air Pollution: 2005-2026 Health and Economic Damage Estimates. Toronto: OMA.*

**Key Message:**

- In 2003, the average population exposure to NO<sub>2</sub> in the City of Hamilton was 21.3 ppb, compared to 22.2 ppb in the Industrial Impact Zone.
- The average population exposure of NO<sub>2</sub> in the City of Hamilton has remained relatively stable over the past decade.
- The air levels of NO<sub>2</sub> in the City of Hamilton's Industrial Impact Zone have remained relatively stable over the past four years.
- In 1999, the Industrial Impact Zone had higher air levels of NO<sub>2</sub> than the average population exposure. Since 2000, however, air levels of NO<sub>2</sub> in the Industrial Impact Zone have been comparable with the average population exposure.
- This suggests that NO<sub>2</sub> continues to be a contributing factor to premature death and respiratory illness in the City of Hamilton.

### Annual Average Nitrogen Dioxide (NO<sub>2</sub>) Trend, City of Hamilton, 1993-2003



*Source: Annual Sustainability Indicators Report, City of Hamilton, 2004*

**Limitations:**

- Average NO<sub>2</sub> level for the Industrial Impact Zone in 1998 is not available.
- There is limited information available on the transformation and transport of air pollutants across different communities, which can make it difficult to identify priority actions to address NO<sub>2</sub> emissions.



## ANNUAL AVERAGE RESPIRABLE PARTICULATE MATTER (PM<sub>2.5</sub>)

**Description:**

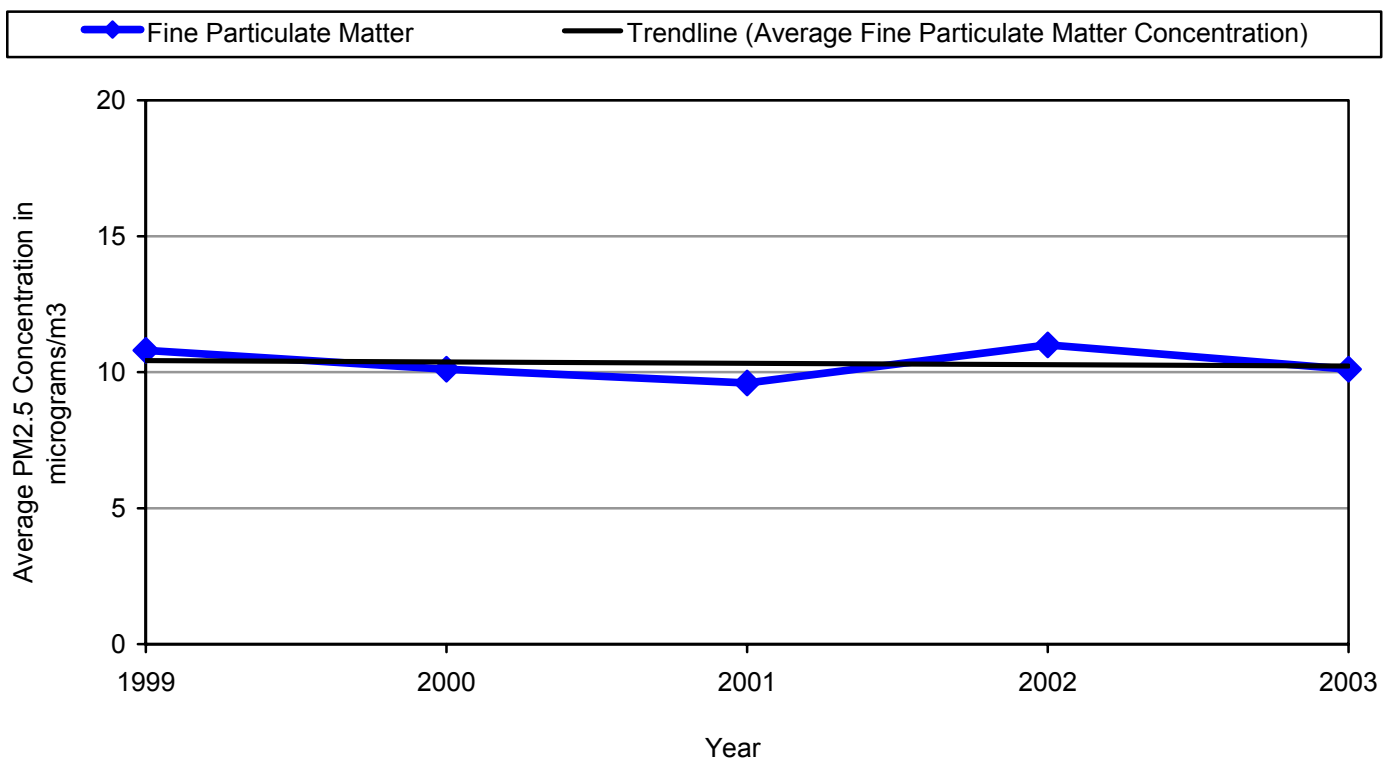
- Annual average respirable particulate matter concentration (PM<sub>2.5</sub>) is a measure of the yearly average air level of particulate matter that is 2.5 micrometers or less in diameter measured in the air.
- Particulate matter refers to solid and liquid particles that are airborne. PM<sub>2.5</sub> can penetrate deep into the lungs and has been strongly linked to negative health impacts.
- Air pollution, including PM<sub>2.5</sub> and other air pollutants, will result in approximately 290 premature deaths and 2840 emergency room visits this year.

*Source: Ontario Medical Association (OMA) 2005. The Illness Costs of Air Pollution: 2005-2026 Health and Economic Damage Estimates. Toronto: OMA.*

**Key Message:**

- In 2003, the average PM<sub>2.5</sub> concentration in the City of Hamilton was 10.1 micrograms/m<sup>3</sup>.
- Since 1999, air levels of PM<sub>2.5</sub> have remained relatively stable.
- This means that PM<sub>2.5</sub> continues to contribute to premature death and hospitalization in the City of Hamilton.

**Average Fine Particulate Matter (PM<sub>2.5</sub>) Concentration, City of Hamilton, 1999-2003**



*Source: Annual Sustainability Indicators Report, City of Hamilton, 2004*

**Limitations:**

- There is limited information available on the transformation and transport of air pollutants across different communities, which can make it difficult to identify the actions that should be prioritized for action.



## GROUND LEVEL OZONE (O<sub>3</sub>) – HOURS EXCEEDING 50PPB

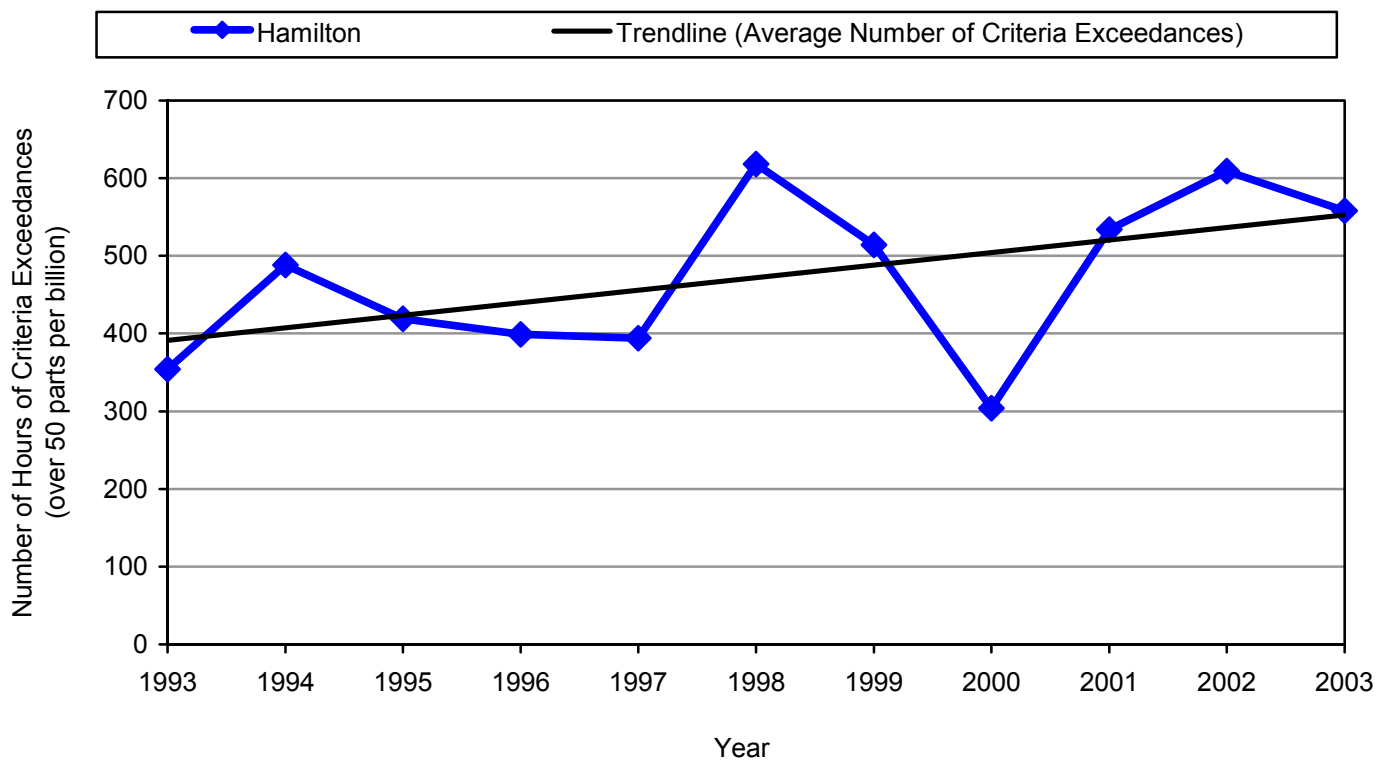
**Description:**

- The number of hours that air levels of ozone exceed 50 parts per billion (ppb) each year.
- The 50 ppb air level is used by the Ontario Ministry of the Environment to classify air quality as “moderate” under the Air Quality Index.
- Ground level ozone is an important indicator to track because it is a major component of smog that is harmful to human health. Air pollution, including ozone and other air pollutants, will result in approximately 290 premature deaths and 2840 emergency room visits this year. *Source: Ontario Medical Association (OMA) 2005. The Illness Costs of Air Pollution: 2005-2026 Health and Economic Damage Estimates. Toronto: OMA.*

**Key Message:**

- Over the last decade, ozone levels in the City of Hamilton varied considerably from one year to the next.
- Overall, ozone levels in the City of Hamilton tend to be increasing.
- This suggests that, in the future, the very young, the very old, and those with respiratory conditions who are particularly vulnerable to ozone will be at increased risk for respiratory problems due to exposure to ozone.

**Number of Ground Level Ozone (O<sub>3</sub>) Criteria Exceedances, City of Hamilton, 1993-2003**



*Source: Annual Sustainability Indicators Report, City of Hamilton, 2004*

**Limitations:**

- There is limited information available on the transformation and transport of air pollutants across different communities, which can make it difficult to identify priority actions to address ozone emissions.

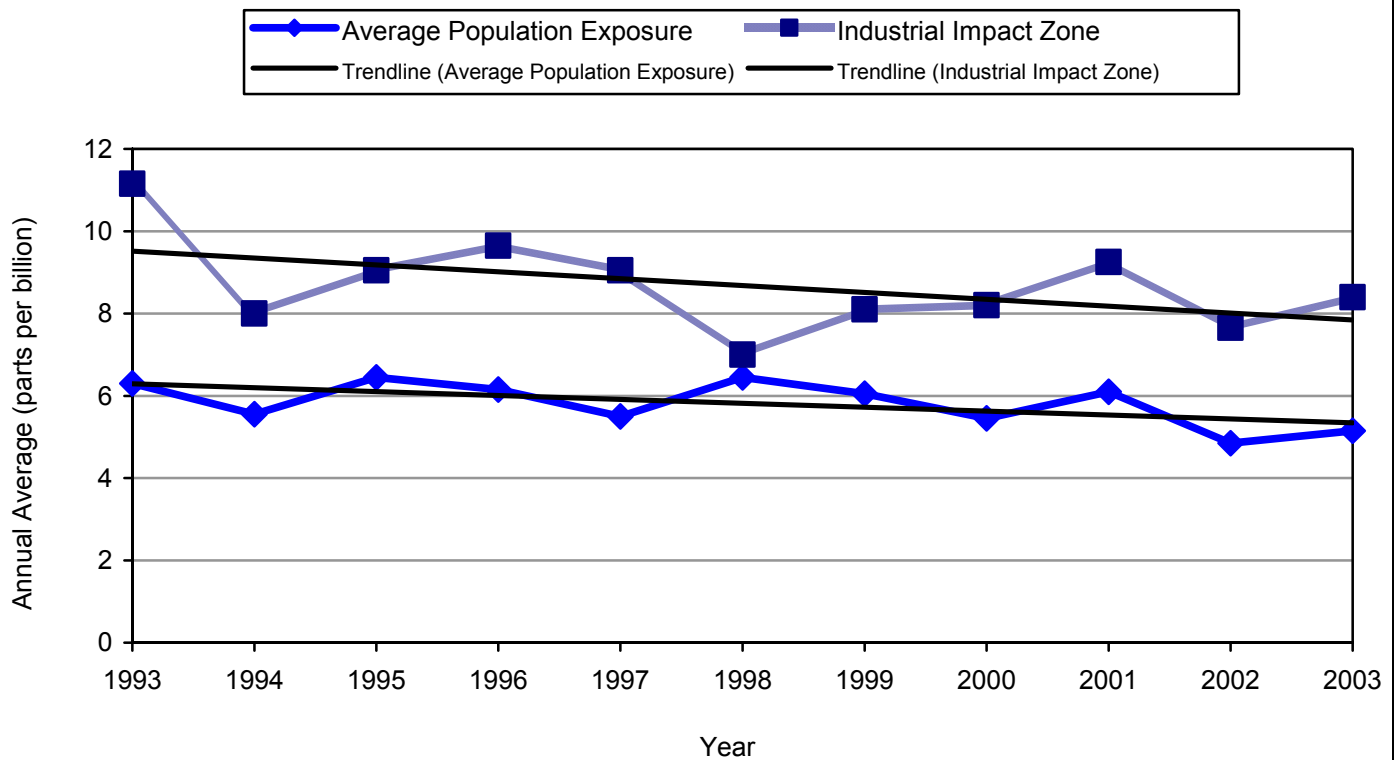


## ANNUAL AVERAGE SULPHUR DIOXIDE (SO<sub>2</sub>) CONCENTRATION

- Description:**
- Annual average sulphur dioxide (SO<sub>2</sub>) exposure is a measure of the average ambient air concentrations of SO<sub>2</sub> measured at monitoring stations throughout the City in parts per billion (ppb).
  - It is important to monitor air levels of SO<sub>2</sub> because it is linked to an increase in daily respiratory hospital admissions and an increase in cardiac and respiratory mortality.

- Key Message:**
- In 2003, the average population exposure to SO<sub>2</sub> in the City of Hamilton was 5.15 parts per billion, compared to 8.4 ppb in the Industrial Impact Zone.
  - The average population exposure of SO<sub>2</sub> in the City of Hamilton has decreased over the past decade.
  - Sulphur dioxide levels in the City of Hamilton's Industrial Impact Zone have fluctuated over the past decade, but overall have decreased.
  - This suggests a reduction in the number of premature deaths and respiratory and cardiovascular hospitalizations in the City of Hamilton where SO<sub>2</sub> is a contributing factor.

### Annual Average Sulphur Dioxide (SO<sub>2</sub>) Trend, City of Hamilton, 1993-2003



Source: Annual Sustainability Indicators Report, City of Hamilton, 2004

- Limitations:**
- There is limited information available on the transformation and transport of air pollutants across different communities, which can make it difficult to identify priority actions to address SO<sub>2</sub> emissions.



## 11.0 CLOSING REMARKS

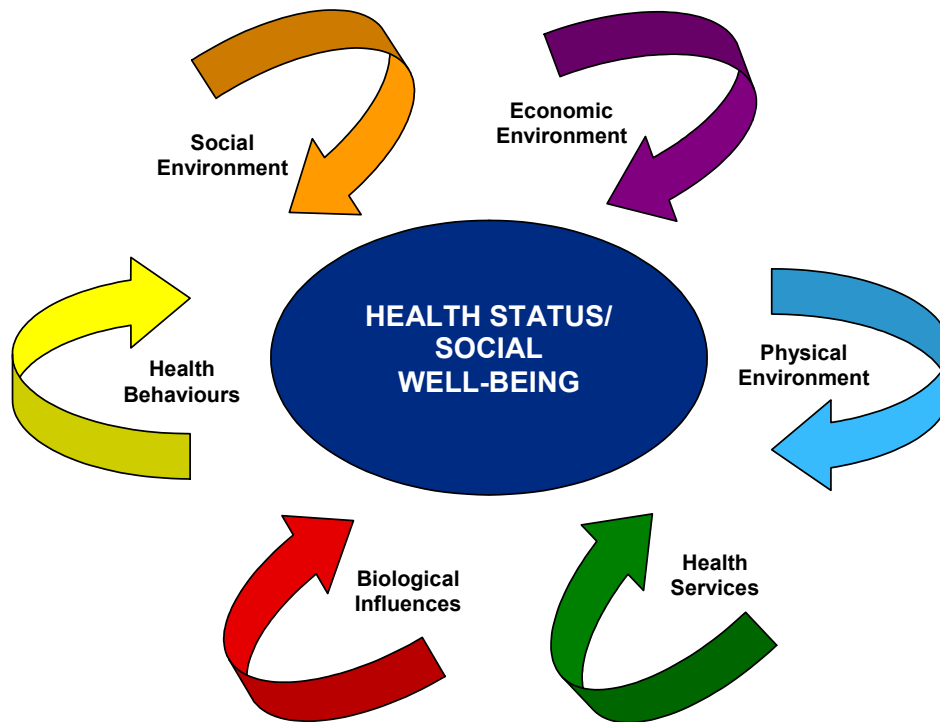
The 2005 Social and Health Issues Report (2005 SHIR) provides a compilation of health status indicators intended to help measure the progress toward achieving many of the City of Hamilton Public Health and Community Services (PHCS) Department's goals and objectives. Most of the indicators were selected based on program planning and research processes that occurred in previous years, as well as input and feedback from the various program delivery areas within PHCS in the 2005 year. Thus, this report provides an overall picture of the socioeconomic profile and community health status of the City of Hamilton's population, using the most recent data available.

The 2005 SHIR has some methodological strengths and limitations. Incorporating peer comparison data where applicable is a major strength. The presentation of the peer comparison data is novel in this report, and provides an opportunity to examine the City of Hamilton in comparison to its three peer communities; the City of Ottawa, Middlesex-London, and Windsor-Essex. This information can be used to examine the relative effectiveness of health promotion and intervention strategies and inform public health program planning. A second strength of the 2005 SHIR is that it encompasses indicators from the determinants of health model (Appendix A).

A limitation of the 2005 SHIR is that information and data reflective of a more current time period were not available for some sources. The 2005 SHIR provides health status information of the population in the City of Hamilton without direct reference to the programs and policies that may affect the health outcomes. Furthermore, peer comparison data were not available for every indicator presented in the report.



## APPENDIX A: DETERMINANTS OF HEALTH AND WELL-BEING MODEL



### Definitions:

**Economic Environment** – Refers to financial status – related factors such as income and employment.

**Social Environment** – Refers to social factors such as family structure, ethnicity, mother tongue and education.

**Health Behaviours** – Refers to personal lifestyle behaviours, such as smoking, physical activity and nutrition, as well as, healthy child development.

**Biological Influences** – Refers to conditions which are passed on from a parent to an offspring.

**Health Services** – Includes those services which: promote, protect, maintain and restore good health.

**Physical Environment** – Refers to such physical factors as: working conditions, air and water quality, communicable disease, condition of housing and community safety

*Source: Modified from model cited by the Canadian Public Health Association, 1997, and developed by the British Columbia Provincial Health Office, 1994.*



## APPENDIX B: ONTARIO PUBLIC HEALTH UNIT PEER GROUPS: A SPECIAL REPORT



## Ontario Public Health Unit Peer Groups: A Special Report

### Background

The opportunity for comparing health regions has emerged through the expansion of existing data sources to the health region level of geography. After accounting for the effects of various social and economic characteristics known to influence health status, it is then possible to compare the relative effectiveness of health promotion, prevention, and monitoring activities across regions (Veenstra 2002). One way to remove the effects of socio-economic determinants of health on measured differences in health status between health regions is to classify health regions into groups of comparable social and economic characteristics and conduct comparisons only among communities of the same peer group (Studnicki et al. 2001, Zodet and Clark 1996). This way, the identified differences in health status would not likely be attributed to socio-economic determinants of health.

In February 2002, Larry MacNabb of the Health Statistics Division of Statistics Canada wrote a working paper entitled 'Health Regions Peer Groups' (MacNabb 2002). The paper outlined the data, methodology, empirical techniques and results of a study that defined health regions across Canada, based on an analysis of 24 social and economic characteristics known to influence health status. The final result was the construction of 10 groups of peer health regions, representing all health regions across Canada.

In November 2003, a revised set of peer groups was released in the Health Indicators product due to the availability of newer data inputs and a number of health region boundary changes since Spring 2002.

After reviewing the methodology, the City of Hamilton determined that the aforementioned analysis should be redone using only health regions in the province of Ontario because health regions outside the province impacted too heavily on outcomes of health regions within the province. In January 2004, representatives from the City of Hamilton approached the Health Statistics Division to have a new set of peer groups constructed, using the same empirical techniques as those presented in Health Indicators, but only for health regions across Ontario. Because there are 37 health units in Ontario, it was determined that the numbers would be sufficient to complete the analysis.

### Methodology

#### *Data*

While data used in the original paper were collected through the 1996 Canadian Census (MacNabb 2002), 2001 Canadian Census data were available at the time of analysis and, therefore, used wherever possible. Data for the 37 health regions in Ontario were used in the present analysis. As with the original peer groups' working paper, data from 24 socio-economic and socio-demographic determinants of health variables were analyzed. Figure 1 displays the complete list of variables included in the present analysis.

#### *Analysis*

Data were analyzed using SAS, Version 8 (Cary, NC). Health Regions were grouped using a non-hierarchical clustering algorithm, which minimized the within cluster sum of squared errors for a predefined number of clusters. The maximum number of clusters was set at six, which would yield an average number of 6 to 7 health regions per cluster. While the maximum cluster number is different than in the original working paper, the average number of health regions per cluster is consistent.

For the current project, two different decisions were made with respect to the member numbers in a cluster before the analysis took place. One decision included not forcing the City of Toronto into another peer group, if it was shown to be distinct from all other health regions. The other decision was to allow a possible peer group of northern health



regions to remain separate from other peers, if such a group should arise. These decisions were made because both Toronto and Ontario's north are perceived to be so regionally unique from the rest of the province that forcing them to be part of other peer groups would be unreasonable.

Standardization of variables was carried out the same as the original working paper (MacNabb 2002).

## **Results**

### *Initial Clusters*

The clustering algorithm was instructed to group the 37 Ontario health units into a set of no more than six clusters. The result was indeed six clusters. This indicated that setting the initial maximum at six clusters was appropriate.

Two principal components accounted for approximately 70% of the variability between peer groups. The first principal component was a measure of urban economic prosperity (i.e. high population growth, high levels of post-secondary education, low unemployment rates, high proportion of immigrants). The second principal component was a measure of overall wealth distribution (i.e. low income rate, owning a home, share of total income held by the lower 50th percentile of households).

Sex distribution and proportion of population under age 15 years added about 15% of variability to the model. Overall, there were four principal components that accounted for 85% of the variability in the model. Table 1-1 shows details of the principal component analysis for the first four principal components.

The overall result for the initial clusters is found in Step 4.2 of Table 1-2.

### *Exclusion of outliers*

The FASTCLUS procedure was used to determine which outliers, or peer group clusters, should be excluded from the analysis. The FASTCLUS procedure was re-run using the cluster means for all clusters with a frequency greater than one. Toronto was the only cluster that was excluded in this step.

Looking at Table 1-2, results differed between Step 4.2 and Step 4.3, where Toronto was excluded. This means that once the influence of Toronto was removed from the analysis, a number of other influential factors arose that helped differentiate the assignment of other health regions into peer groups.

To determine which variables played a key role in defining the health region peer groups, the final clusters were run against all 24 variables in a stepwise discriminant analysis. Partial R-SQ statistics for entry and removal were set at 0.15. Any variable which had an R-SQ of 0.5 or higher when regressed against a variable already in the model was removed from the analysis.

The strongest predictors of the final peer groupings are (1) Population Density and (2) Growth Rate. Looking at the correlations with other variables, population density was highly correlated with the overall population size, the proportion of visible minorities and the proportion of recent immigrants as a proportion of the total population. These variables are ones that generally define urban or rural environments.

Population growth was highly correlated with economic conditions such as unemployment rate, average income, average value of dwellings, and the proportion of children in low income families.



## *Collapsing Small Clusters*

As mentioned previously, a priori decisions were made to not force Toronto or a handful of northern health regions into a peer group. Results showed Toronto as a peerless health region. Moreover, there was a peer group of just two northern health units that was not forced to join with others.

Results of the final peer groupings for the 37 health regions in Ontario are presented in Step 5.3 in Table 1-2. Note that there is no difference between Step 5.3 and Step 4.3, save a re-ordering of peer group letter codes. Summary statistics of each peer group are shown in Table 1-3.

## **Discussion**

Overall, there was a moderate amount of cluster homogeneity on the first two principal components urban economic propensity and overall wealth distribution. With the effect of Toronto as an outlier being removed from the analysis, there was a shuffling of urban health regions into peer groups with other urban health regions. Similarly, some semi-rural health regions were merged with other semi-rural health regions into a common peer group.

The most important defining variables were population density and population growth in a region, closely followed by proportion of lone-parent families and proportion of Aboriginals in the region. Employment rate and proportion of post-secondary graduates appeared to have a minor influence on the groupings. Looking at correlations with other variables, population density was highly correlated with overall population size, proportion of visible minorities and proportion of recent immigrants as a proportion of the total population. Population growth was highly correlated with economic conditions, such as unemployment rate, average household income, average value of dwellings, and the proportion of children in low income families.

Since Toronto and Ontario's north (Northwestern Health Unit and Porcupine Health Unit) were not forced to merge with other peer groups, the final result is a set of six peer groups ranging in size from one to 12 health regions.

Peer groupings constructed in the present study have similarities to those presented in the Health Indicators product in November 2003. Both sets of peer groupings identify Toronto as a unique region compared to all other health regions in the province and report that Northwestern Health Unit and Porcupine Health Unit are similar to each other, but distinct from other health regions in Ontario. This suggests that these regions indeed are different from the rest of the province and substantiates the decision to not force them into peer groups with other health regions.

Differences exist between the resulting peer groupings and those provided in November 2003. There are subtle differences in the grouping of health regions with high population densities, high population growth, and a low proportion of Aboriginal persons in the population. Considerable differences were found in groupings of health regions with fairly high population density, average population growth, and a low proportion of Aboriginal persons in the population. Northern health regions not characterized by low population density, heavy population decline, and a high proportion of Aboriginal persons in the population, including Algoma Health Unit and North Bay & District Health Unit, were grouped with health regions with slight population decline and low population density, rather than being grouped on their own. This demonstrates that conducting the analysis with only health regions in Ontario and excluding Toronto from the analysis, greatly impacted on the resulting peer groupings.

In 2004, the Central West Health Planning Information Network (CWHPIN) explored how and in what ways Ontario health regions were similar to others in the peer groupings presented in Statistics Canada's (2003) Health Indicators. For each health region, a variance distance score was calculated for all socioeconomic variables and added together



to generate an overall distance score. This score was then used to assess the degree of difference between health regions (CWHPIN 2004).

Results from CWHPIN's (2004) study are consistent with the peer groupings constructed in the present study. Both studies, for example, identify Toronto as an extreme outlier. Moreover, health regions within peer groups have relatively small distance scores, suggesting that they are socio-economically similar. It should be noted, however, that not all health regions in a particular peer group were identified as the closest neighbours by CWHPIN (2004). This may be indicative of the difference in methodologies used, as the present study employed clustering methods while CWHPIN's study used univariable analyses.

Results from both studies, therefore, validate the other's findings demonstrating the rigor of both methodologies. Using peer groups constructed in the present study is, therefore, a reliable way to identify health regions in Ontario that are socio-economically comparable.

The methodology used in the present study has some limitations. Each province defines the geographic boundaries for health regions based on administrative preferences and, in some instances, are composed of several smaller administrative areas to ensure that survey sample estimates will attain a sufficient coefficient of variation to be reportable. This is one of the major limiting factors affecting the peer grouping methodology exercise. Health regions can also be strictly urban or rural, or some combination of both. The lack of homogeneity in defining health region boundaries makes the exercise of assigning health regions to peer groups much more difficult as it can have a large impact on the extent to which a variable represents a specific region and, resultantly, important defining factors can be missed.

### **Future Research**

This study shows that excluding health regions outside of Ontario from the peer group cluster analysis strengthens the utility of the peer groups constructed for Ontario health regions.

Given the wealth of data sources that have information at the provincial and Canada-wide scale, health regions within Ontario could further utilize these information sources by coordinating their content selection for population health surveys in order to facilitate comparison and joint reporting efforts within peer groups. Examination of health outcomes using the peer group comparison methodology offers health regions insight into the relative effectiveness of current health intervention programs on health outcomes and provides opportunities for information sharing and collaboration. Furthermore, it has potential public health policy implications related to the evaluation of existent programs and joint opportunities among peer communities to plan, design and implement future health promotion and program intervention strategies.

### **Acknowledgments**

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**Figure 1.** Variables used in cluster analysis to define peer groups.

<b>Variable</b>	<b>Short Form</b>
2001 Population	Pop01
Aboriginal Percentage	AboPer
Average Dwelling Value	AvgDwl
Average Income	AvgInc
Post-Secondary Graduates	PostSec
Employment Rate	Emp
Growth Rate	Growth
Government Transfer Income	GovTran
Housing Affordability	HouAff
Immigrant Percentage	ImmPer
Median Share of Income	MedShr
Internal Migrant Mobility	MigMob
Lone-Parent Families	LnePrnt
Long Term Unemployment Rate	LtUnemp
Low Income, Individuals Age 15+ Years	Low15
Low Income Children	LowKids
Male-Female Ratio	MFRat
Owner-Occupied Dwellings	OwnDwl
Population Density	PopDen
Population Under 15 Years	Pop15
Population 65 Years and Older	Pop65
Strong Census Metropolitan and Agglomeration Influenced Zones	MIZ
Unemployment Rate	Unemp
Visible Minority	VisMin



**Table 1-1 Principal Component Analysis**

	Eigenvalue	Difference	Proportion	Cumulative Proportion	Eigenvectors for the first four principal components				
						Prin1	Prin2	Prin3	Prin4
1	8.647	0.572	0.360	0.360	MedShr	0.085	-0.305	-0.012	-0.074
2	8.075	5.695	0.337	0.697	MFRat	-0.036	-0.196	0.396	0.305
3	2.380	1.149	0.099	0.796	Pop01	0.215	0.237	-0.015	0.278
4	1.231	0.287	0.051	0.847	Pop15	0.152	-0.175	0.402	-0.003
5	0.944	0.139	0.039	0.887	AvgDwl	0.321	0.055	-0.017	0.090
6	0.806	0.348	0.034	0.920	OwnDwl	0.004	-0.295	0.013	0.014
7	0.457	0.044	0.019	0.939	MigMob	0.079	-0.224	-0.188	-0.080
8	0.414	0.138	0.017	0.957	GovTran	-0.316	0.006	-0.176	0.117
9	0.275	0.075	0.012	0.968	VisMin	0.264	0.182	0.073	0.199
10	0.200	0.020	0.008	0.976	LnePrnt	-0.024	0.297	0.176	-0.180
11	0.180	0.074	0.008	0.984	Emp	0.228	-0.209	-0.147	0.069
12	0.106	0.039	0.004	0.988	PopDen	0.156	0.245	-0.054	0.399
13	0.067	0.008	0.003	0.991	MIZ	0.170	0.111	0.012	-0.592
14	0.059	0.016	0.003	0.993	Unemp	-0.239	0.163	0.276	-0.119
15	0.043	0.006	0.002	0.995	LtUnemp	-0.257	0.157	0.203	-0.087
16	0.037	0.011	0.002	0.997	Low15	-0.085	0.326	-0.058	-0.024
17	0.026	0.006	0.001	0.998	LowKids	-0.073	0.331	-0.060	0.015
18	0.020	0.008	0.001	0.999	AvgInc	0.312	-0.009	0.147	-0.089
19	0.012	0.003	0.001	0.999	HouAff	0.070	0.276	-0.156	-0.096
20	0.009	0.004	0.000	1.000	Pop65	-0.223	-0.036	-0.448	0.145
21	0.005	0.001	0.000	1.000	AboPer	-0.187	0.032	0.421	0.077
22	0.003	0.001	0.000	1.000	ImmPer	0.260	0.190	0.054	0.237
23	0.002	0.001	0.000	1.000	Growth	0.311	-0.061	-0.013	-0.109
24	0.001	0.000	1.000		PostSec	0.223	0.134	-0.047	-0.273



**Table 1-2 Summary of Cluster Assignments**

Region Number	Region Name	Step 4.2	Step 4.3	Step 5.3 (FINAL)
3595	City of Toronto Health Unit	D	F	A
3549	Northwestern Health Unit	C	C	B
3556	Porcupine Health Unit	C	C	B
3526	The District of Algoma Health Unit	A	A	C
3527	Brant County Health Unit	B	A	C
3538	Hastings and Prince Edward Counties Health Unit	A	A	C
3540	Chatham-Kent Health Unit	B	A	C
3541	Kingston, Frontenac and Lennox and Addington Health Unit	B	A	C
3542	Lambton Health Unit	B	A	C
3546	Niagara Regional Area Health Unit	B	A	C
3547	North Bay and District Health Unit	A	A	C
3555	Peterborough County-City Health Unit	A	A	C
3561	Sudbury and District Health Unit	A	A	C
3562	Thunder Bay District Health Unit	A	A	C
3563	Timiskaming Health Unit	A	A	C
3537	City of Hamilton Health Unit	B	B	D
3544	Middlesex-London Health Unit	B	B	D
3551	City of Ottawa Health Unit	B	B	D
3568	Windsor-Essex County Health Unit	B	B	D
3531	Elgin-St Thomas Health Unit	B	D	E
3533	Grey Bruce Health Unit	E	D	E
3534	Haldimand-Norfolk Health Unit	E	D	E
3535	Haliburton, Kawartha, Pine Ridge District Health Unit	E	D	E
3539	Huron County Health Unit	E	D	E
3543	Leeds, Grenville and Lanark District Health Unit	E	D	E
3545	Muskoka-Parry Sound Health Unit	E	D	E
3552	Oxford County Health Unit	E	D	E
3554	Perth District Health Unit	E	D	E
3557	Renfrew County and District Health Unit	E	D	E
3558	The Eastern Ontario Health Unit	B	D	E
3530	Durham Regional Health Unit	F	E	F
3536	Halton Regional Health Unit	F	E	F
3553	Peel Regional Health Unit	B	E	F
3560	Simcoe County District Health Unit	B	E	F
3565	Waterloo Health Unit	B	E	F
3566	Wellington-Dufferin-Guelph Health Unit	F	E	F
3570	York Regional Health Unit	F	E	F



**Table 1-3 Cluster Descriptive Analysis of each Peer Group**

Cluster		N	Mean	Min	Max
A	PopDen	1	3939.4	3939.4	3939.4
	Growth	1	4.0	4	4
	LnePrnt	1	19.7	19.7	19.7
	AboPer	1	0.5	0.5	0.5
	PostSec	1	61.1	61.1	61.1
B	PopDen	2	0.4	0.32	0.47
	Growth	2	-6.3	-9.5	-3
	LnePrnt	2	15.1	14.4	15.7
	AboPer	2	19.1	11.6	26.5
	PostSec	2	47.2	46.1	48.2
C	PopDen	12	42.8	0.65	220.37
	Growth	12	-1.7	-9.2	3.5
	LnePrnt	12	14.9	13.3	16.8
	AboPer	12	5.2	1.3	11.7
	PostSec	12	52.4	48	58.7
D	PopDen	4	260.4	121.55	438.87
	Growth	4	5.7	3.5	7.3
	LnePrnt	4	16.1	15.9	16.6
	AboPer	4	1.4	1.1	1.9
	PostSec	4	57.9	50.9	68.6
E	PopDen	11	26.3	6.44	48.68
	Growth	11	1.4	-1.2	3.2
	LnePrnt	11	11.7	9.8	13.2
	AboPer	11	1.7	0.4	3.6
	PostSec	11	48.9	46.2	54.2
F	PopDen	7	322.1	57.53	796.26
	Growth	7	13.2	8.2	23.1
	LnePrnt	7	13.0	10.9	14.7
	AboPer	7	0.9	0.4	2.6
	PostSec	7	57.6	51.9	65.5

