

Chapter 9

Behaviour and Health

Key Findings:

Twenty one percent of Ontario residents aged 12 and over smoke on a regular basis, a slight decline from the similar rate in 1990. Rates are highest in the North region and lowest in Toronto. Smoking rates amongst teenage males equal those of females. The equality of rates across both sexes is constant, even though prevalence of teen smoking varies by survey. A school-based survey conducted by the Centre for Addictions and Mental Health estimated the prevalence to be 28%, while the Ontario Health Survey 1996/97 (OHS 96/97) estimated 13%. This discrepancy could be due to sampling differences (OHS 96/97 may have included more young teens) and random error. Smoking remains a highly preventable cause of mortality.

Seventy three percent of Ontarians are current drinkers (i.e. they consumed alcohol within the last year). In terms of excess consumption, 5% of the current drinkers indicated they drink more than 15 drinks per week, while 16% indicated they drank 5 or more drinks on one occasion at least once a month. The highest proportion of persons drinking over 15 drinks per week was in the North region. Males in the North also had the highest rate of drinking and driving (12%) compared to the Ontario rate for males (9%). Drinking and driving for females in Ontario was lower than that of males and estimated at 3%.

A high proportion of males (53%) and females (59%) in Ontario are considered inactive on the Physical Activity Index as calculated by estimating energy expenditure. Exercise is one of the important preventive factors that can reduce the risk of heart disease.

Twenty-eight percent of Ontarians were “obese” as defined by having a body mass index (BMI) greater than 27 (34% of males and 21% of females). The North region has the highest proportion of people with a BMI greater than 27. Toronto has the lowest proportion. The clustering of these risk factors (smoking and high BMI) in the North is consistent with the high mortality rates from heart disease observed in this region.

Introduction

This chapter discusses smoking, drinking, physical activity and body weight issues and their influence on health. The inter-relationship of behaviour to health is both complex and dependent on some environmental factors. For instance, smoking rates vary across different economic groups, with the highest rates observed in those with low incomes, less education and those whose friends smoke. This one example demonstrates the complex interaction of social environment, behaviour, and the adverse health outcomes of lung cancer, ischemic heart disease and chronic lung disease. For definitions of key terms used throughout this chapter, consult the Glossary of Terms at the end of the chapter.

Smoking

Smoking remains the leading cause of preventable mortality in Canada.¹ Recent studies have estimated its extremely high cost on Canadian society. Smoking remains an important health issue since it is shown to be linked with ischemic heart disease, lung cancer, chronic lung disease and a number of other cancers.

Smoking Among Persons Aged 12 and Over

According to the OHS 96/97, an estimated 21% of persons ages 12 and over are regular smokers. This number is slightly lower than the equivalent indicator for 1990 when it was 23%. In 1996/97, a greater proportion of males than females smoked on a regular basis (23% and 19% respectively). In every age group excluding those aged 65 to 74 years old, a higher proportion of males reported smoking on a daily basis.

The rate of smoking peaks among those age 20 to 44 years old and then declines with age. This results from both adults being successful in quitting smoking as well as the higher mortality rates among smokers. Hence as smokers reach age 65 and over, their chances of dying increase and their proportion in the general population decreases. Table 9-1 shows the reported prevalence of smoking by males and females for all of Ontario.

A strong inverse relationship exists between daily smoking rates and socioeconomic status. Persons with lower income and lower education are more likely to report smoking on a regular basis. In 1996, 30% of those with a low income reported smoking on a daily basis as compared to 21% among those with middle or high incomes. Similarly, 28% of persons with less than a secondary education reported smoking on a daily basis compared to 16% of those with a university or college education.

Smoking Among Teenagers

The smoking habit generally begins in the teenage years. As a result, many programs are aimed at preventing teenagers from starting to smoke, while special cessation programs aim to get them to quit before any long-term health consequences can occur. Earlier initiation of smoking is associated with heavier smoking and earlier onset of health related conditions.² “A 15-year-old who smokes is twice as likely to die before age 70, compared to a 15-year-old non-smoker”.²

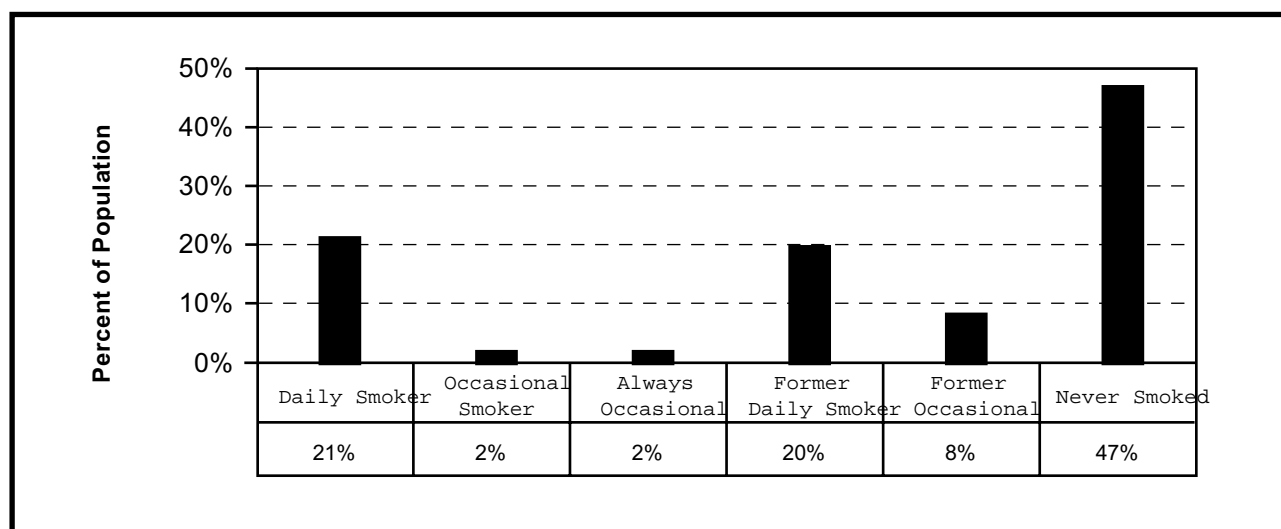
The Center for Addictions and Mental Health has conducted a survey of high school students with respect to smoking behaviour. The survey, done in 1997, estimated that 19% of males and 20% of females in grades 7,9,11, and 13 smoked daily. These numbers are higher than those from other sources but, since the survey has been performed repeatedly for years, it may represent more accurate information. The respondents may trust the confidentiality of the survey being done in schools as compared to being asked questions over the telephone in the Ontario Health Survey 1996/97 (OHS 96/97).

The OHS 96/97 asked teenagers 12 to 19 years old about their smoking habits. This survey estimated that 13% of teens in this age group smoke on a regular basis, roughly the same proportion as reported smoking in 1990. In 1996, slightly more males (14%) than females (11%) reported smoking on a daily basis. As stated above, these proportions are lower than the estimates from the school based surveys. This may reflect the fact that more young teens (i.e. age 12 and 13 year old) were included in the sample and the fact that some under-reporting of smoking may have occurred.

Type of Smoker

For each smoker in society, there is roughly one former smoker. In 1996/97, an estimated 21% of the population aged 12 and over smoked while 20% were former smokers. Forty-seven percent had never smoked. The remaining ten percent consisted of former occasional smoker (8%) and always occasional smokers (2%) (see Figure 9-1).

Figure 9-1 — Type of Smoker in Ontario, 1996/97



Source: Ontario Health Survey, 1996/97

Proportion Living in Smoke-free Homes

Table 9-1 — Percentage of Males and Females Living in Smoke-Free Homes

Age	Male	Females
12-19	65	65
20-44	65	66
45-64	68	70
65-74	80	79
75+	85	88
Total	68	69

Source: Ontario Health Survey, 1996/97

Exposure to environmental tobacco smoke or “second hand smoke” is associated with a number of diseases including heart disease, respiratory problems, and cancer. Cigarettes release harmful chemicals and these can cause illnesses in non-smokers who live and breath second hand smoke. Current efforts to reduce second hand smoke include the encouragement of people to designate their home as being “smoke free”.

According to the OHS 96/97, an estimated 69% of residents age 12 and over lived in smoke-free homes. A slightly larger proportion of females (69%) compared to males (68%) reported living in a smoke-free home. There was also a direct relationship between age of the respondent and proportion living in smoke free homes (see Table 9-1).

Regional Variation of Smoking

Smoking rates are highest among residents of the North and lowest among residents of Toronto. In the North region, 29% of males and 25% of females reported daily smoking in 1996. This is compared to 19% among males and 15% among females in Toronto (see Table 9-2).

Table 9-2 — Rates of Regular Smoking, Occasional Smoking, and Former/Never Smoked

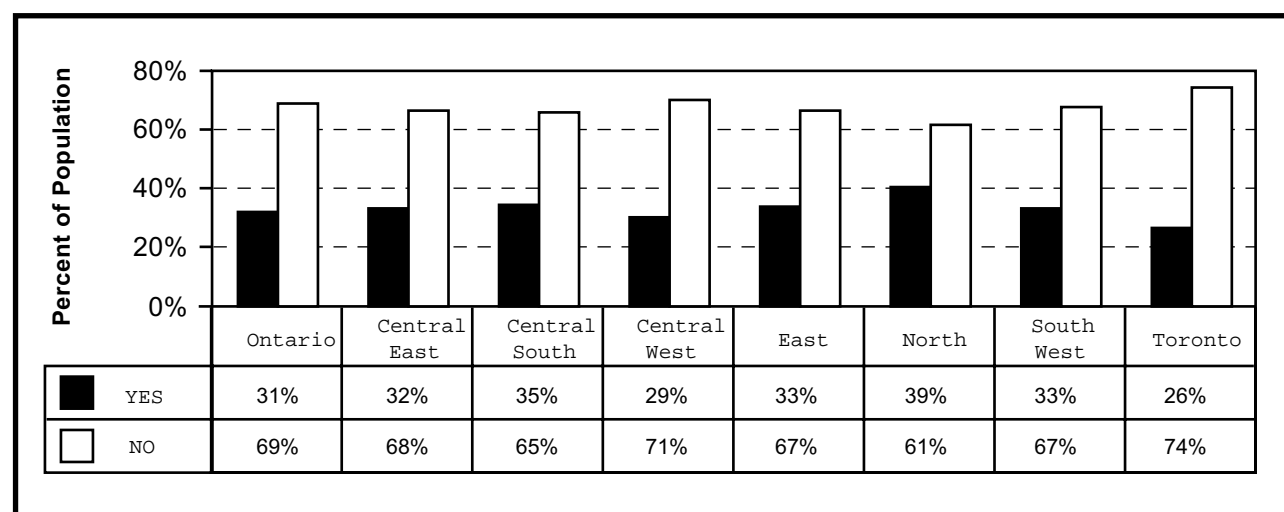
Region	Regular Smoker			Occasional Smoker			Former/Never Smoked	
	Males	Females	Total	Males	Females	Total	Males	Females
Ontario	23%	19%	21%	2%	2%	2%	72%	78%
Central East	23%	19%	21%	2%	2%	2%	74%	78%
Central South	24%	21%	23%	2%	2%	2%	71%	75%
Central West	24%	17%	22%	2%	2%	2%	72%	79%
East	24%	21%	23%	2%	2%	2%	71%	75%
North	29%	25%	27%	2%	2%	2%	67%	72%
South West	25%	20%	22%	2%	2%	2%	71%	77%
Toronto	19%	15%	17%	2%	2%	2%	75%	81%

Source: Ontario Health Survey, 1996/97

As with adult smokers, the North region had the highest proportion of teenagers reporting that they smoked on a regular basis. In the OHS 1996/97, an estimated 16% of teens aged 12-19 living in the North region, are daily smokers.

The lowest rates of smoking and highest rates of smoke free homes occurred in Toronto. On the other hand, the highest rates of smoking and lowest rates of smoke free homes occurred in the North region (see Figure 9-2).

Figure 9-2 — Household Members Smoke in the Home, Ontario, 1996/97



Source: Ontario Health Survey, 1996/97

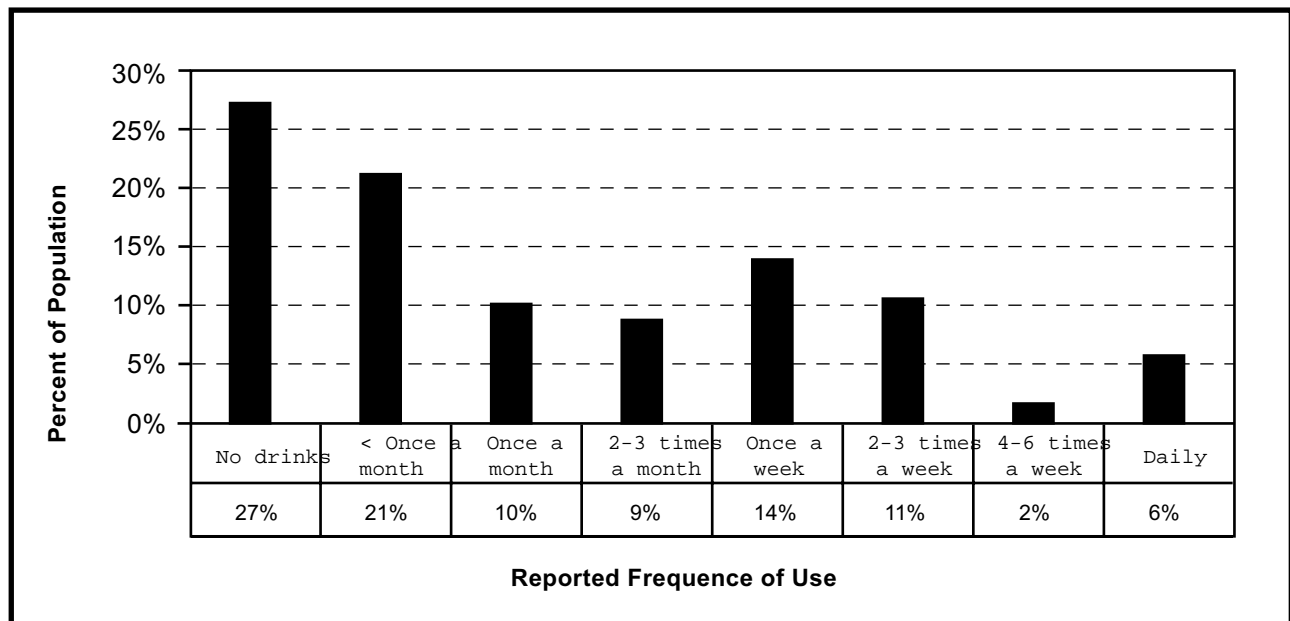
Alcohol

Alcohol is one of the most commonly used drugs. It is associated with conditions such as acute intoxication causing death, injuries from drinking and driving, to chronic conditions such as liver cirrhosis and brain disorders (encephalopathies). Alcohol has been estimated to account for 3% of all deaths in Canada in 1992.³ The causes of excessive alcohol use are many, and are often linked to other social problems including unemployment, domestic violence, and mental health problems. Small doses of alcohol (one or less ounce per day) have been found to have a positive effect on heart disease. However this improvement can be offset by excessive consumption of alcohol or other risk factors for heart disease such as smoking, obesity, or lack of physical activity.

Current Drinkers

In Ontario, 73% of residents are current drinkers, defined as having consumed alcohol in the past 12 months (see Figure 9-3). In 1996, males reported a higher rate of current drinking than females, with 78% and 69% respectively. By age, respondents in the 20 to 44 year age group recorded the highest proportion of current drinking, with 82%. Seniors aged 75 and older recorded the lowest proportion of current drinking with 55%.

Figure 9-3 — Reported Alcohol Use, Ontario, 1996/97



Source: Ontario Health Survey, 1996/97

High Volume Drinkers

Keeping in mind the definition of 15 or more drinks in the previous week, an estimated 5% of the population of current drinkers would be classified as heavy drinkers. This corresponds to 4% of all residents of Ontario age 12 and over. The proportion of heavy drinkers was highest among current drinkers aged 20 to 44 years old (6%). This corresponded to 4% among all persons aged 20 to 44 years old. The rate of heavy drinking decreased steadily with age, reaching a minimum of 2% of current drinkers aged 75 years and over (see Table 9-3).

Table 9-3 — Rates of Heavy Drinking, Binge Drinking & Drinking and Driving Among Current Drinkers* by Health Region

Region	Heavy Drinking (15 or more drinks)			Binge Drinking (5 or more drinks)			Drinking and Driving		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Ontario	8%	2%	5%	23%	8%	16%	9%	3%	6%
Central East	7%	2%	4%	22%	7%	15%	8%	3%	5%
Central South	8%	2%	5%	22%	9%	15%	10%	4%	7%
Central West	9%	1%	5%	22%	8%	15%	9%	2%	5%
East	7%	1%	4%	24%	9%	16%	10%	3%	7%
North	10%	1%	6%	28%	10%	19%	12%	3%	8%
South West	9%	1%	5%	25%	8%	17%	11%	3%	7%
Toronto	8%	2%	5%	19%	8%	14%	6%	2%	4%

* Current drinkers refer to those who have consumed any alcohol in the previous 12 months
Source: Ontario Health Survey, 1996/1997

Alcohol consumption differs by gender. Males reported higher rates of heavy alcohol use than females. In 1996, 8% of male current drinkers compared to 2% of female current drinkers met the definition of heavy drinking. In Ontario, males aged 20 to 44 years old reported the highest rates of heavy drinking at 10% of current drinkers (7% of all males aged 20 to 44 years old).

Education and income also affected rates of heavy alcohol use. Respondents with high incomes reported slightly higher rates of heavy drinking compared to persons in low-income groups (5% of high-income current drinkers versus 4% of low-income current drinkers). Inversely, respondents with lower education report higher rates of heavy drinking than persons with higher education (5% of secondary school grads and 5% of less than secondary school graduates are heavy drinkers compared to 4% of college and university graduates).

By region, the North had the highest proportion of male heavy drinkers with 10% of current drinkers reporting consuming 15 or more drinks per week. The East regions and Central East reported the lowest rate of male heavy drinkers at 7% (see Table 9-3).

Occasions of Heavy Drinking

Heavy drinking per occasion and intoxication are patterns of drinking most associated with injury. For simplicity, this is called binge drinking. An estimated 6% of current drinkers in Ontario binge drank once per month in 1996 and a further 10% binge drank more than once per month. In total this means that 16% of the current drinkers (11% of the entire population) drank 5 or more drinks on one occasion, one or more times per month. In 1996, 8% of male current drinkers and 4% of female current drinkers binge drank once per month.

The proportion of drinkers having 5 or more drinks per occasion decreases with age. The highest proportion of binge drinkers was between the ages of 12 to 19 years old. According to the OHS 96/97, 20% of residents aged 12 to 19 had as many as 5 drinks per occasion, once a month or more.

In 1996, 21% of current drinkers with secondary school education or less reported having 5 or more drinks per occasion, once a month or more. Of those with university or college degrees, this proportion was 18%. There was no significant variation by income group in that those current drinkers who had low incomes and those who had middle to high incomes reported equal rates of binge drinking.

Drinking and Driving

In 1996, 6% of drivers reported driving once or more while under the influence of alcohol. This was more common among males (9%) than females (3%).

The rates of drinking among drivers varied by age. An estimated 8% of drivers aged 20 to 44 years old reported drinking and driving compared to 7% for drivers aged 16 to 19 years old. The rates of drinking and driving by sex are shown in Table 9-3.

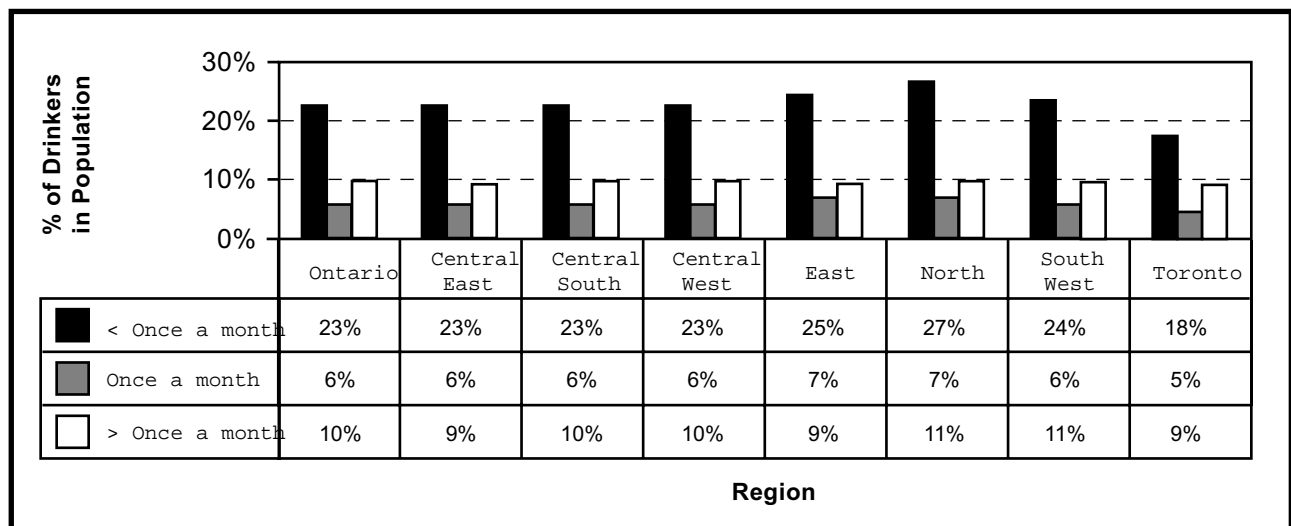
As with the heavy consumption of alcohol, the rates of drinking and driving are associated with increased levels of income and education. In Ontario, 7% of drivers with high incomes reported drinking and driving compared to only 4% of drivers with low incomes. Similar percentages are seen for drivers with university or college degrees versus those who have a secondary education or less.

Regional Variation of Drinking

In 1996/1997, the East had the highest proportion of current drinkers in the province with 77%, Toronto had the lowest, with 67%. Having five or more drinks per occasion was reported most often in the North region. The rate of male binge drinking among current drinkers was 23%. Figure 9-4 shows this variation visually with the lowest rates of binge drinking being the Central East region and Toronto.

Eight percent of drivers in the North region, the highest of all regions, reported drinking and driving as compared to the low of 4% in Toronto. This may be due to the availability of public transportation in large centers like Toronto. By sex, the highest rates of reported drinking and driving were among males in the North region where 12 % reported driving under the influence of alcohol one or more times.

Figure 9-4 — Frequency of 5 or more Drinks per Occasion by Region, Ontario, 1996/97



Source: Ontario Health Survey, 1996/97

Physical Activity

Regular, moderate and vigorous physical activity has been shown to benefit both the performance related and health related fitness. As well, physical activity has been linked empirically to the prevention of several diseases including ischemic heart disease, weight control, and osteoporosis among elderly women. Benefits to mental health have also been reported. Consensus conferences have determined that increasing the regular physical activity of a population could reduce rates of heart disease to the same degree as smoking prevention.

Frequency of Physical Activity

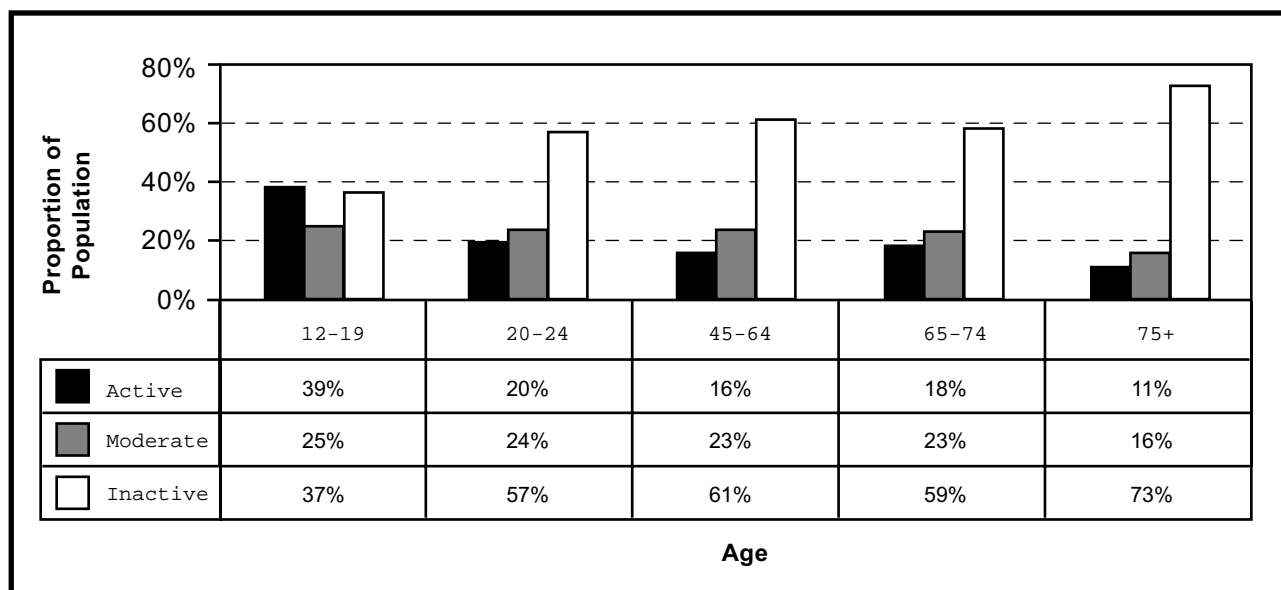
In Ontario in 1996, 61% of residents age 12 and over reported exercising frequently. The highest rates of physical activity were reported among those persons age 12 to 19 years old and this decreased to 46% by age 75 and over. The rates for males and females were equal. The variation in frequency and intensity of physical activity along with BMI index by region is shown in Table 9-4.

Intensity of Physical Activity (PAI)

While 61% of Ontario residents may have reported doing frequent physical activity, only 21% of residents were “active” according to the Physical Activity Index (PAI). For the remaining persons, 23% of Ontario residents were classified as “moderately active” and 56% were classified as “inactive”. There appears to be commitment to doing exercise but the intensity is not sufficient in order to gain full benefit from the exercise.

Women were more likely to be inactive with 59% of women being classified as inactive compared to 53% for men. As with reported physical activity, variation in PAI measures varied by age. Those ages 12 to 19 years old were least likely to be inactive (37%) while 73% of those aged 75 and over were considered inactive (see Figure 9-5). In each of these two age groups, the rates of inactivity for males exceeded those for females.

Figure 9-5 — Intensity of Physical Activity by Age, Ontario, 1996/97



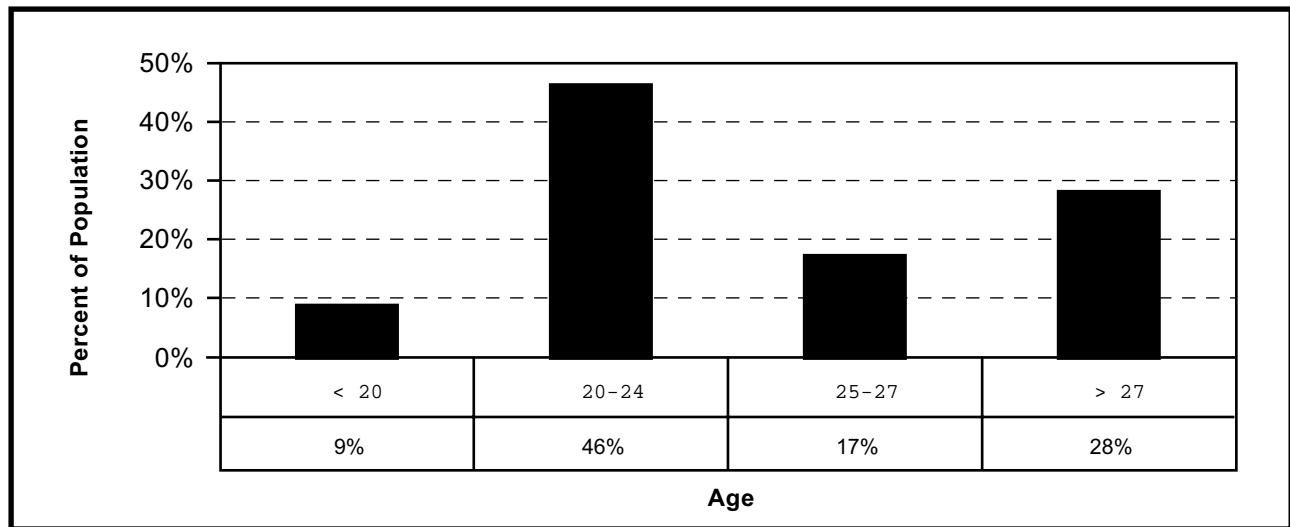
Source: Ontario Health Survey, 1996/97

Physical activity varied by education level and income. Respondents with less than a secondary education reported higher levels of physical inactivity. For example, 56% of those with a university or college education were physically inactive while 68% of those with less than a secondary education were also inactive. Analysis by income showed similar trends of increasing exercise among higher income groups.

Body Mass Index

In 1996, 9% of the population had a BMI of less than 20 while 28% had a BMI of greater than 27. The full distribution is shown in Figure 9-6. BMI varies by age with older persons having higher levels of BMI. This is congruent with the decreased level of expenditure in the older age groups. For all age groups, the proportions of obese men exceed those of obese women.

Figure 9-6 — Distribution of BMI in Ontario, 1996/97



Source: Ontario Health Survey, 1996/97

The rates of BMI vary inversely with income and level of education. As the education of the respondent increases, the proportion of obese persons decreases. For example, 39% of those with less than a secondary education have a BMI greater than 27 compared to 26% for those with a university or college degree.

Regional Variation of Physical Activity and Body Mass index

The East region had the highest rates of physical activity using the PAI measures. However, all regions were roughly equal and no major variation by region was observed (see Table 9-4).

Toronto has the lowest proportion of persons with a high BMI. This may reflect the age pattern of Toronto to a certain degree. However, the age distribution is not enough to explain the main variation in rates of obesity. The North region has the highest rate of obesity.

Table 9-4 — Rates of Frequency of Physical Activity, PAI and BMI>27

Region	Frequency of Physical Activity Categorized as 'Infrequent'*		Physical Activity Index 'Inactive'*		Body Mass Index Greater than 27*	
	Males	Females	Males	Females	Males	Females
Ontario	21%	22%	53%	59%	34%	21%
Central East	21%	21%	55%	59%	35%	20%
Central South	20%	21%	50%	61%	38%	23%
Central West	22%	21%	55%	58%	35%	20%
East	17%	18%	47%	55%	34%	23%
North	21%	21%	50%	56%	41%	29%
South West	21%	22%	52%	59%	39%	22%
Toronto	25%	27%	58%	63%	27%	19%

* BMI and PAI are calculated, Frequency of Physical Activity is self-reported
Source: Ontario Health Survey, 1996/97

Glossary or Terms

Term	Definition Used
Binge drinking (Occasions of heavy drinking)	Person age 12 and over who consumes more than 5 drinks on one occasion.
Body Mass Index (BMI)	Applied to non-pregnant persons aged 20 to 64 years old, the BMI is calculated by dividing the individual's weight in kilograms by the square of their height in meters (i.e. weight in kilograms/ [height in meters times height in meters]). It reflects the net effect of the energy balance of a person; those with BMI over 27 are considered obese. Categories: BMI<20, BMI 20–25, BMI 25.1–27, BMI>27
Current drinkers	Persons 12 and over who consumed alcohol in the past 12 months.
Drinking and driving	Persons with a valid driver's license who replied that they had driven a motor vehicle once or more while under the influence of alcohol
Frequency of physical activity	Having performed physical activity for a minimum of 15 minutes per session: regular — 12 or more times per month. occasional — 4 to 11 times per month; infrequent — 0 to 3 times per month. *This indicator measures the presence of exercise but does not indicate the intensity.
High volume drinker (Heavy Drinker)	Persons aged 12 and over who consume 15 or more drinks in the previous week
Physical activity index (PAI)	PAI is calculated based on the type and duration of exercise thus reflecting energy expenditure: active — those who averaged 3.0+kcal/kg/day; moderate — those who averaged 1.5 to 2.9+kcal/kg/day; inactive — those with an energy expenditure below 1.5 kcal/kg/day
Regular smoker	Regular smoker is defined as a person aged 12 and over who smokes cigarettes on a daily basis.
Teen smoker	Person between the ages of 12 and 19 years old who smokes.

References

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