

**ORAL HEALTH STATUS AND USE OF DENTAL SERVICES
AMONG ONTARIANS AGED FIFTY YEARS AND OVER**

**An Analysis of Data from the
Ontario Health Survey
1990**

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COMMUNITY DENTAL HEALTH SERVICES RESEARCH UNIT

**HEALTH MEASUREMENT AND EPIDEMIOLOGY
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SUMMARY

In 1990, 18.6% of Ontarians aged 50 to 64 years and 38.9% aged 65 years and over were edentulous. The prevalence of edentulism was highest in the North East and North West and higher among older Ontarians living in low income households.

Almost two-fifths (42.3%) of edentulous Ontarians aged 50 to 64 years and almost half (47.7%) of edentulous Ontarians aged 65 years and over expressed some limitation in their ability to chew. The rates for the dentate were 8.0% and 15.3%, respectively.

Overall, one-fifth of Ontarians aged 50 years and over experienced one or more of five oral symptoms in the previous four weeks. Among the dentate, almost one-in-ten had toothache and a similar proportion sore or bleeding gums.

Three-fifths of Ontarians aged 50 years and over visited a dental care provider in the previous year. The dentate were more likely than the edentulous to have made one or more visits (75.0% vs. 18.9%) in this time period. Low income Ontarians were less likely to have visited a dentist than those with high incomes irrespective of dental status.

Of those not visiting a dental care provider in the previous year, one quarter of the dentate and one-tenth of the edentulous cited cost as the main reason.

Two-thirds of Ontarians aged 50-64 years and one-third of Ontarians aged 65 years and over had dental insurance coverage. Variations according to household income were marked. Less than one-third of older Ontarians from low income households had coverage compared with almost three-quarters of those from high income households. The lowest rates of dental visiting were observed among persons from low income households without dental insurance.

Income and geographic inequities in the oral health status of older Ontarians were independent. These were income gradients in edentulism in all regions and regional differences within all income groups.

Taken together, the data indicate that there are marked income and geographic inequities in the oral health and access to dental care of Ontarians aged 50 years and over.

INTRODUCTION

It has been predicted that the aging of the Canadian population, the increasing tendency for older adults to retain teeth and changes in attitudes towards oral health among these older adults will lead to changes in patterns of need and demand for oral health care among this section of the population. As a consequence, there is considerable interest in their oral health status and use of dental services.

This report examines the oral health status and use of dental services for Ontarians aged 50 years and over using data from the Ontario Health Survey 1990. It provides information for two age groups, 50 to 64 years and 65 years and over, at the provincial, regional and local level.

THE ONTARIO HEALTH SURVEY 1990

The survey was conducted in response to the need for more complete information on the health status and needs of Ontarians. Its objectives were to:

- * measure the health status of the population
- * collect data on the determinants of illness and death
- * collect data related to socio-economic, demographic and geographic variations in health
- * measure awareness of the risks associated with smoking, alcohol, nutrition and exercise
- * collect measures of the use of health services
- * provide these planning data for each of the 42 Public Health Units (PHU's) and 28 District Health Councils across Ontario.

The target population for the survey was all Ontarians living in private households during 1990. People living in institutions, First Nations people living on reserves and residents of extremely remote areas were excluded. The survey aimed to obtain data from approximately 1000 people within each PHU in the province. Accordingly, approximately 760 dwellings were randomly selected from Census Enumeration Areas within each PHU and all those living at the dwelling were included in the survey.

Data were collected by a personal interview conducted with one member of the household able to give information for all members of the household and a self-administered questionnaire completed by each person in the household aged 12 years and over. The majority of the questions on oral health and use of dental services were included on the self-complete component of the survey.

The response rate to the surveys was high and data were obtained from 8837 people aged 50 to 64 years and 7112 people aged 65 years and over. This means that information on their oral health and use of dental services has a high degree of accuracy.

DATA ON ORAL HEALTH AND USE OF DENTAL SERVICES

As the survey did not involve clinical examinations, data on oral health status were obtained by means of self-reports. Because it was possible to include only a limited number of questions on oral health in the survey the following key oral health indicators were used:

- * dental status (dentate/edentulous)
- * denture status
- * ability to chew
- * dental and facial pain
- * other oral symptoms

These self-report indicators of oral health were comparable to the general health indicators used in the survey. In addressing oral impairment, functional limitation and pain and discomfort they represent key components of the contemporary concept of health. In addition, they represent specific underlying oral conditions and are broadly indicative of treatment needs.

Questions on the use of dental services included the following:

- * time since last visit to a dental care provider
- * number of visits in the last year
- * for those not visiting in the last year, main reason for not visiting
- * dental insurance coverage

Since data on number of dental visits in the previous year were obtained from the personal interview, the majority were proxy responses and were not analyzed here. Data on dental insurance coverage were also included as part of the personal interview phase of the survey and have been included in this report.

The specific aims of the study on which this report is based were as follows:

1. to undertake an analysis of the oral health data from the Ontario Health Survey for persons aged 50 years and over with particular emphasis on differences by age, gender, household income and geographic location.
2. to compare the characteristics of older adults in Ontario with those of participants in the Ontario Study of the Oral Health of Older Adults.
3. to produce provincial and regional estimates of clinically defined oral health indicators by adjusting findings from the Ontario Study of the Oral Health of Older Adults to the characteristics of the provincial/regional populations of the same age.

The study is presented as two reports. In this first report, estimates of all OHS variables at the provincial, regional and PHU levels are reported for persons aged 50 to 64 years and 65

years and over. The second report covers aims 2) and 3) as above.

This report is presented in two parts. First, estimates are provided for the two age groups for all variables at the provincial, regional and PHU levels where coefficients of variation allow estimates to be released. Estimates are provided by gender where appropriate. Second, socioeconomic variations in oral health and use of dental services are explored and analyses undertaken to determine whether or not geographic variations are explained by or independent of variations by socioeconomic status. In these analyses subjects were divided into low, medium and high income groups. Urban respondents were classified as low income if household income was less than \$12,000 regardless of family size; was \$12,000-\$19,999 and family size was two or more; or was \$20,000-\$29,999 and family size was four or more. Rural respondents were similarly classified except that household sizes of 3 or more and 7 or more were used. Respondents who were not low income were further divided into those with household incomes of less than \$50,000 and those with incomes of \$50,000 or more and designated medium and high income groups.

All data presented in this report represent population estimates and not sample statistics. In order to obtain these estimates data from the survey were weighted to the characteristics of the provincial population. The population base from which all estimates were derived is given in Table A in the Appendix.

Where estimates were based on fewer than 30 survey respondents they have not been released and are replaced in the tables by (-). The coefficient of variation was used as a measure of the precision of estimates derived from the survey. It is calculated by dividing the standard error of the estimate by the estimate itself and multiplying by 100. Where sample sizes were

such that coefficients of variation fell between 16.6 and 25.0% the estimates have been qualified by an asterisk (*). These estimates are subject to high sampling variability. Where the coefficient of variation was 25.1% or more, estimates have not been released and are replaced in the tables by (-).

THE ORAL HEALTH STATUS OF OLDER ONTARIANS

EDENTULISM

The prevalence of edentulism (loss of all natural teeth) is a key indicator of the oral health status of adult populations and a significant predictor of the use of dental services. Over the last thirty years rates of edentulism in older adults have declined dramatically. In 1990, 18.6% of Ontarians aged 50 to 64 years were edentulous compared to 38.9% of those aged 65 years and over. In both age groups slightly more women than men had lost all their natural teeth (Table 1). Since the incidence of edentulism appears to be low, even among the very old, the aging of the population will mean that rates of edentulism in those aged 65 years and over will fall dramatically in the future.

The prevalence of edentulism was not equally distributed across the province: there were marked differences in rates by region with the Central Eastern region having the most favourable rates in both age groups and the North East and North West having the worst rates (Figure 1). Among those aged 50 to 64 years rates varied from 15.3% to 31.1% and among those aged 65 years and over from 35.1% to 52.7%.

The excess prevalence among women was observed in all regions with women aged 65 years and over living in the northern regions having the highest rates of all. More than half had lost all their natural teeth (Table 1).

TABLE 1
PERCENT EDENTULOUS BY AGE, GENDER AND REGION

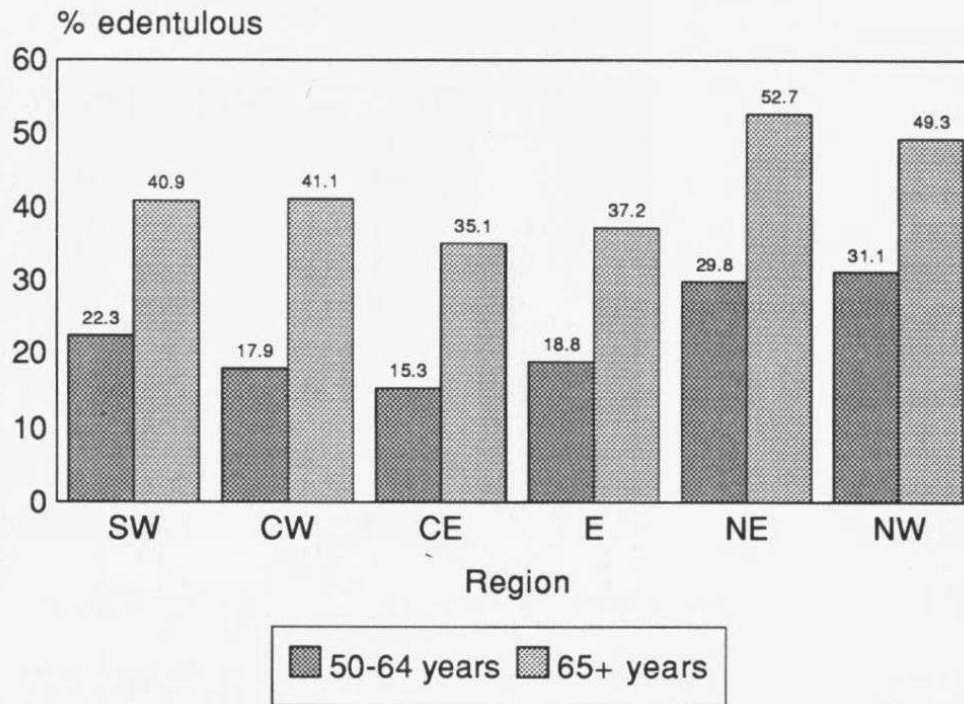
Age:	50-64 years		65 years & over	
	Male	Female	Male	Female
Gender:				
<u>Region</u>				
Southwest	21.5	23.0	38.6	42.5
Central West	15.8	20.1	40.9	41.2
Central East	13.9	16.7	33.9	35.9
East	16.0*	21.6	32.2	40.7
North East	27.6	32.1	49.0	55.6
North West	29.2	33.2	46.5	51.4
Ontario	16.9	20.3	37.1	40.2

* Denotes qualified estimate

Variation in rates of edentulism were also present within regions. Table 2 shows the range of prevalence rates for PHU's in each region for the two age groups. In the majority of cases there is almost a two-fold difference between the PHU's with the most and the least favourable oral health experience.

The age specific rates of edentulism for each of the 42 PHU's is given in Table B (Appendix). Reportable rates for individual PHU's varied from 9.8% to 47.7% for Ontarians aged 50 to 64 years and from 22.6% to 62.9% for those aged 65 years and over.

Figure 1
Prevalence of Edentulism by Age and Region



There was a dramatic association between income and loss of all natural teeth (Figure 2). In the younger age cohort the rate among Ontarians with low incomes (33.9%) was three times that of those with high incomes (11.1%). In the older age cohort the rate was almost double (52.2% vs 28.4%).

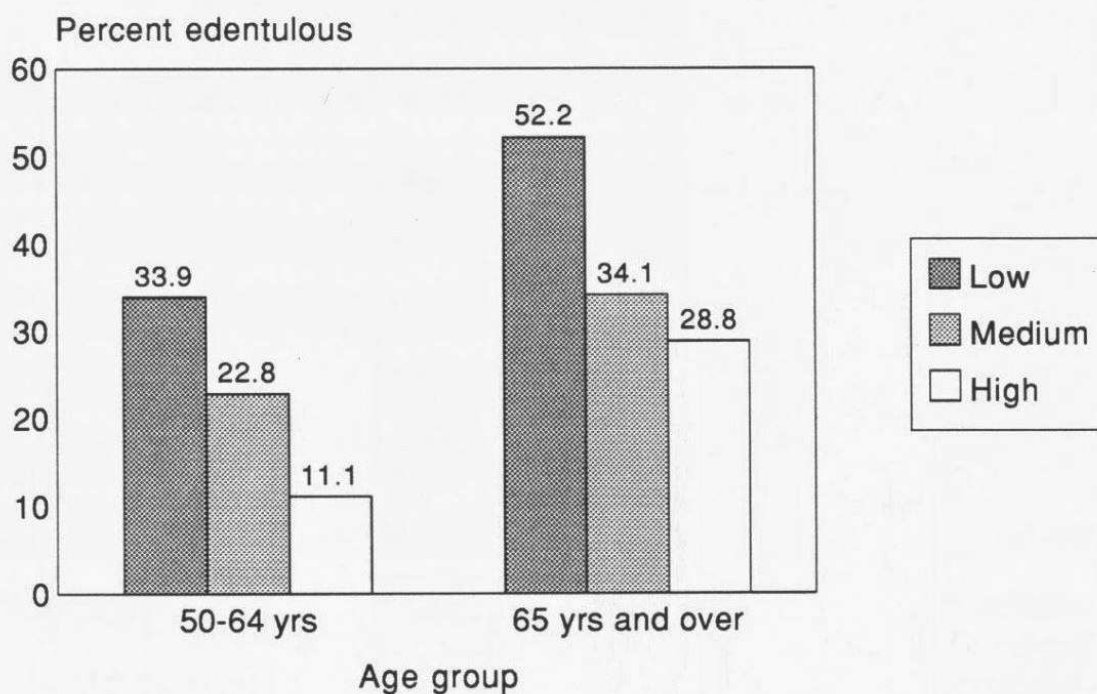
TABLE 2

PREVALENCE OF EDENTULISM: LOWEST AND
HIGHEST PHU RATES BY AGE AND REGION

	<u>Lowest</u>	<u>Highest</u>
South West		
50-64 years	15.5*	34.8
65+ years	31.3	52.0
Central West		
50-64 years	9.8	29.6
65+ years	22.6*	49.7
Central East		
50-64 years	9.8	29.7
65+ years	25.3*	48.4*
East		
50-64 years	18.0*	33.8
65+ years	28.9*	57.0
North East		
50-64 years	19.4*	47.7
65+ years	44.1	62.9
North West		
50-64 years	30.5	32.5
65+ years	47.9	52.2

* Denotes qualified estimate

Figure 2
Prevalence of Edentulism by Age and Income Group

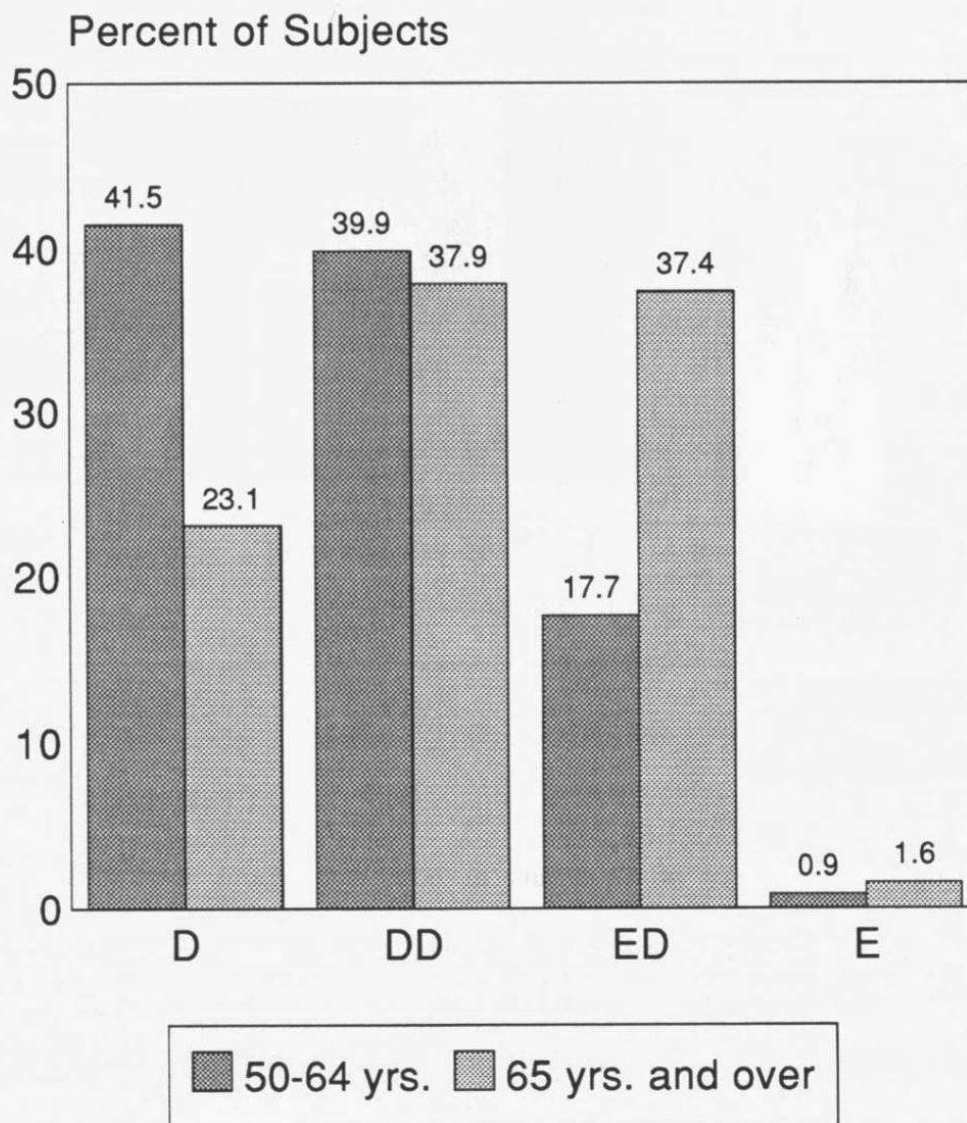


DENTURE STATUS

Although the majority of Ontarians in both age groups were dentate, substantial proportions of those retaining natural teeth wore dentures or bridges (Figure 3). More than half of those aged 50 to 64 years and three-quarters of those aged 65 years and over had some form of prosthetic replacement for missing teeth. In the younger age group those with low incomes were more likely than those with high incomes to wear some form of prosthetic replacement (55.7% vs 46.8%) while in the older age group the differences were very small (63.4% vs 60.8%). Almost all edentulous persons reported wearing dentures.

Regional distributions by denture status and age are shown in Table C (Appendix).

Figure 3
Denture Status By Age: Ontario



D - dentate, no dentures; DD - dentate with one or more dentures/bridges
ED - edentulous with one or more dentures
E - edentulous with no dentures

LIMITATIONS IN ABILITY TO CHEW

The mastication of food is one of the main functions of the oral cavity and the ability to chew a wide range of foods is a key functional indicator of oral health status. Here ability to chew was measured by a short form of the Index of Chewing Ability. Subjects who were unable to bite or chew one or more of three foods (raw carrot, firm meats, raw apple) were defined as having a limitation in chewing capacity.

Table 3 shows the percentage unable to bite or chew one or more indicator foods by age, gender and dental status. Edentulous subjects had substantially higher rates than the dentate and rates were higher for the older compared to the younger age group irrespective of dental status. There were, however, only minor differences between men and women. Overall, some limitation in chewing ability was reported by 14.1% of those in the younger age group and 26.8% of their counterparts in the older age group.

TABLE 3

PERCENT WITH LIMITATION IN ABILITY TO CHEW
BY AGE, GENDER AND DENTAL STATUS:
PROVINCE OF ONTARIO

Age:	50-64 years		65 years & over	
	Dentate	Edentulous	Dentate	Edentulous
Males	6.9	39.1	14.9	45.9
Females	9.2	45.0	15.6	48.8
All	8.0	42.3	15.3	47.7

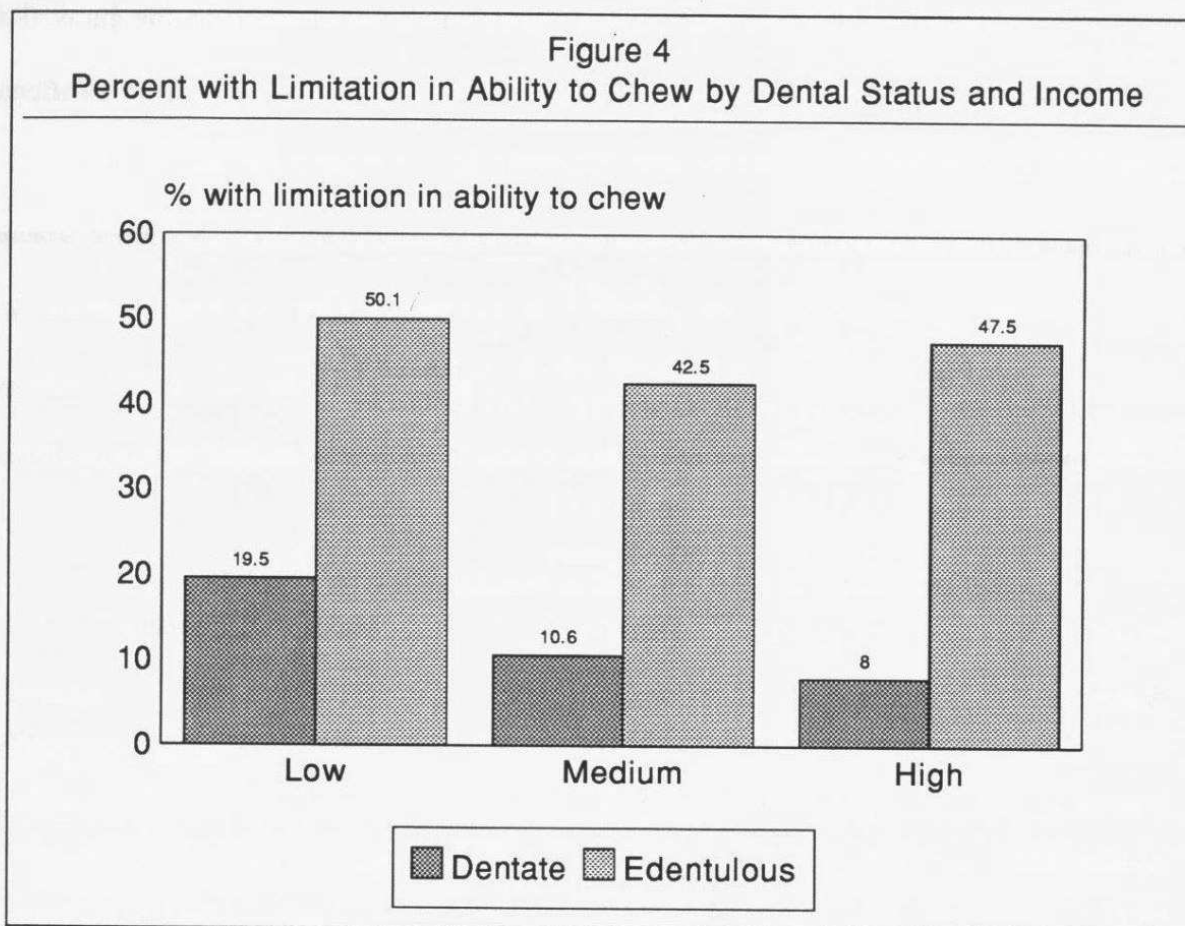
Ability to chew was also associated with denture status (Table 4) but its association with income was clear-cut for dentate individuals only (Figure 4).

TABLE 4

PERCENT WITH LIMITATIONS IN ABILITY TO CHEW
BY AGE AND DENTURE STATUS

Age:	50-64 years	65 years & over
Dentate, no dentures	3.5	7.4
Dentate, one or more dentures/bridges	12.7	20.1
Edentulous with one or more dentures	41.0	46.5
Edentulous, no dentures	68.2	75.7

Regional differences in rates were relatively small (Table D. Appendix). Sample size considerations meant that many estimates of the prevalence of chewing problems by PHU were not reportable or were qualified because of large coefficients of variation. The differences observed need to be treated with caution.



ORAL PAIN AND OTHER ORAL SYMPTOMS

Data were collected on five oral symptoms: toothache; pain in the teeth with hot or cold foods or fluids or sweet things; pain in the jaw joints; sore or bleeding gums; and pain associated with dentures. The reference period used was the month before completion of the questionnaire.

Overall, one-fifth of older adults experienced one or more of the above symptoms: 18.7% had one symptom and 7.5% had two or more symptoms in the previous four weeks. Differences between males and females were small. The younger age group were more likely to have had oral symptoms than the older age group (Table 5). Among the dentate, 9.0% had had toothache,

13.6% sensitivity of teeth with hot or cold foods or fluids and 8.8% sore or bleeding gums. Pain in the jaw joint affected 4.1% of all older adults and pain and discomfort due to dentures affected 9.5%.

TABLE 5
PERCENT WITH ONE OR MORE ORAL SYMPTOMS
BY AGE, GENDER AND REGION

Age:	50-64 years			65 years & over		
	Males	Females	All	Males	Females	All
Gender:						
<u>Region</u>						
Southwest	25.3	27.0	26.1	20.8	17.7	19.0
Central West	28.5	33.3	30.8	22.6	19.9	21.0
Central East	29.7	31.9	30.8	23.0	19.4	20.9
East	32.5	32.1	32.3	21.2*	25.0	23.4
Northeast	27.1	31.3	29.2	21.7	27.4	24.9
Northwest	35.8	31.0	33.5	-	24.3*	20.9
Ontario	29.2	31.4	30.3	22.1	20.7	21.2

* Denotes qualified estimate

- Denotes estimate cannot be released

While there was some variation in oral symptom prevalence rates by region the differences were not marked. More variation was observed when age and gender specific regional rates were compared. Females aged 65 years and over living in the South West had the lowest rate (17.7%) while males aged 50 to 64 years living in the North West had the highest rate

(35.8%) (Table 5). There was also some variation in rates by PHU, although these were not substantial (Table E. Appendix).

Overall, the prevalence of oral symptoms was similar across the three income groups. Among dentate persons, toothache was more common among those living in low income households, while for older Ontarians as a whole, this income group was more likely to experience pain from dentures (Table 6).

TABLE 6
SYMPTOM PREVALENCE RATES BY INCOME GROUP

Income:	Low	Medium	High
Dentate persons:			
Toothache	13.4	9.3	9.9
Sensitivity with hot or cold foods	13.5	16.1	16.4
Sore or bleeding gums	7.4*	8.1	9.9
All persons:			
Pain in jaw joint	6.3	4.6	5.0
Pain from dentures	17.5	11.9	8.8
One or more oral symptoms	25.6	25.5	28.8

*Denotes qualified estimate.

USE OF DENTAL SERVICES

Figure 5 shows the time since the last visit to a dental care provider. Overall, three-fifths had made such a visit in the last year and only 15% reported not having visited for five years

or more. These rates mask significant differences in dental visiting by dental status. Among the dentate, 75.0% had visited a dental care provider in the last year: among the edentulous only 18.9% had visited during this period and two-fifths had not visited for five years or more. Differences by age were relatively small and observed only for those who had lost all their natural teeth (Table 7). Overall, the percent of males and females visiting a dental care provider in the previous year was the same, although slightly more dentate females than dentate males had made a visit (76.4% vs 73.3%) while slightly more edentulous males than females had made a visit (20.5% vs 17.7%).

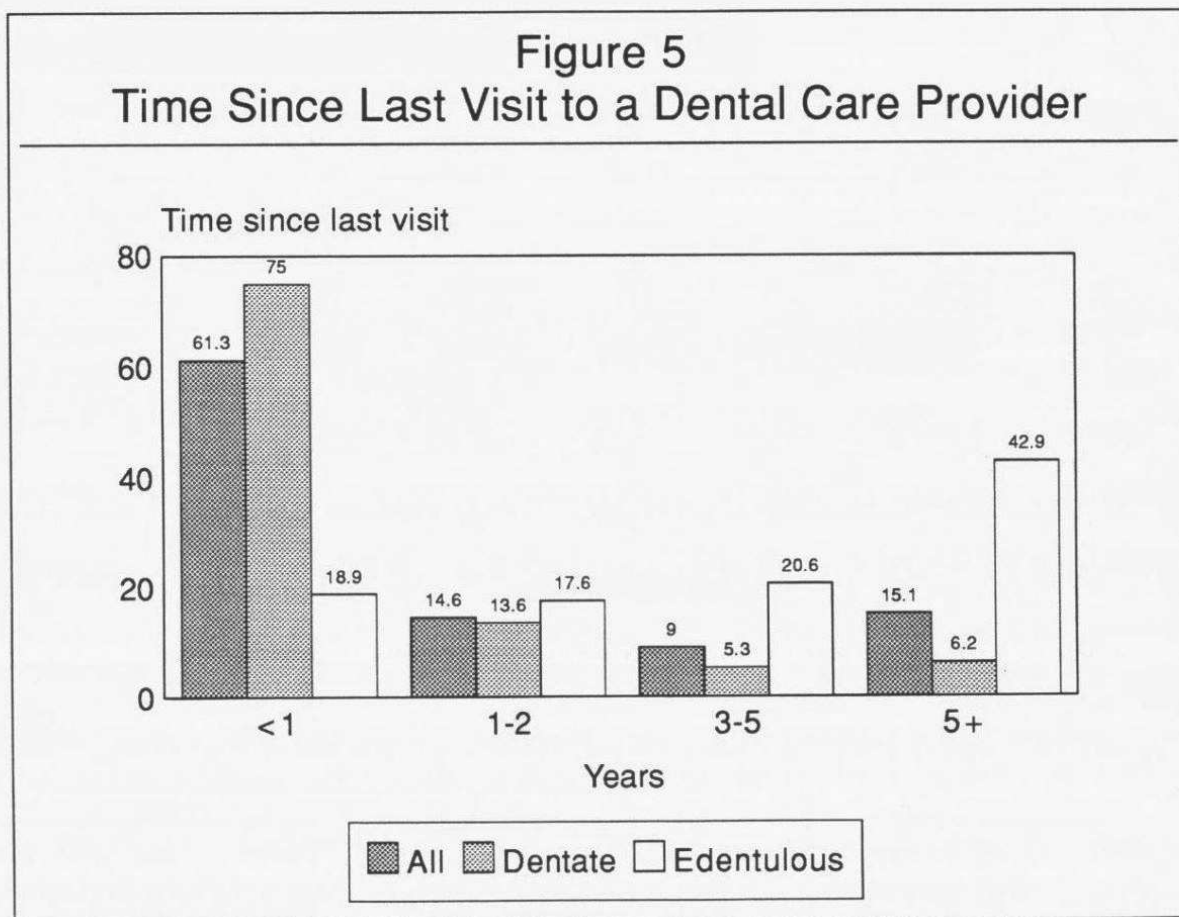


TABLE 7

TIME SINCE LAST VISIT TO DENTAL CARE PROVIDER
BY AGE AND DENTAL STATUS

	50-64 years		65 years & over	
	Dent.	Edent.	Dent.	Edent.
Less than 1 year	75.0	23.7	75.0	15.8
1-2 years	13.8	17.0	13.2	18.0
3-5 years	5.4	19.9	5.2	21.0
5 or more years	5.9	39.4	6.7	45.2

Those with high incomes were more likely than those with low incomes to have visited a dental care provider in the previous year and this was the case for both dentate and edentulous Ontarians (Table 8).

TABLE 8

TIME SINCE LAST DENTAL VISIT BY DENTAL STATUS
AND INCOME GROUP (%)

Dental Status:	Dentate			Edentulous		
	Low	Medium	High	Low	Medium	High
Income Group:						
Less than one year	65.5	72.9	81.3	14.7	19.0	22.2
One to two years	16.9	14.2	11.7	18.4	17.6	17.6
Three to five years	7.6*	6.3	3.3	19.5	19.6	24.9
Five years or more	10.1	6.6	3.7	47.3	43.8	35.4

*Denotes qualified estimate

Table F (Appendix) shows the percent making a dental visit in the previous year by region and PHU. Among the dentate, the rate of dental visiting was lowest in the North East at 67.8% and highest in Central West at 77.5%. There were no regional differences in rates among edentulous Ontarians. There was more variation in dental visiting rates by PHU. Among the dentate, rates varied from 51.4% to 83.1%. Most PHU level estimates for the edentulous were not reportable.

Table 9 shows the main reason for not visiting a dental care provider for those who had not made a visit in the previous year. The most common reason given by both dentate and edentulous persons was that nothing was wrong. However, one quarter of the dentate and one tenth of the edentulous cited cost as the main reason for not having made a dental visit in the previous year.

TABLE 9

MAIN REASON FOR NOT VISITING A DENTAL CARE PROVIDER
FOR THOSE NOT VISITING IN THE PREVIOUS YEAR BY DENTAL STATUS

	Dentate	Edentulous
Too expensive	25.2	10.6
Afraid of dentists	10.8	-
Too busy	7.4	-
Nothing wrong	51.5	79.6
Don't know a dentist	-	-
Too far to travel	-	-
Physical or other problems prevented a visit	2.6*	-
Other	-	5.8

* Denotes qualified estimate

- Denotes estimate cannot be released

DENTAL INSURANCE COVERAGE

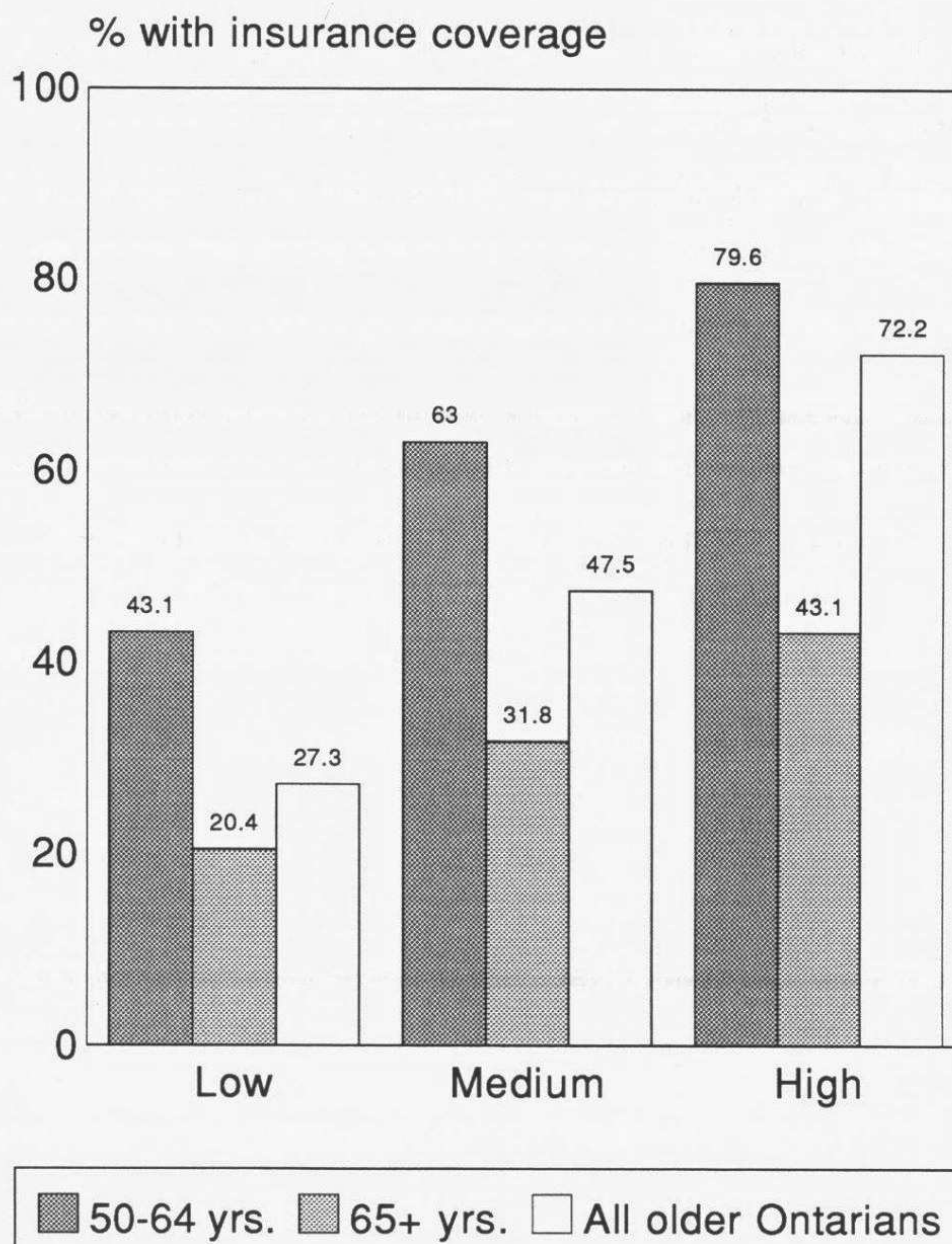
Two-thirds of Ontarians aged 50 to 64 years had dental insurance coverage while less than one third of Ontarians aged 65 years and over were similarly covered. In both age groups men were more likely than women to have dental insurance (Table 10). Dental insurance coverage also varied by household income (Figure 6) so that people aged 65 years and over living in low income households had the lowest rate of coverage. Only 20.4% had some form of dental insurance compared to 79.6% of people aged 50 to 64 years living in high income households.

TABLE 10

DENTAL INSURANCE COVERAGE BY AGE AND GENDER

Age:	50-64 years	65 years & over
Gender:		
Males	71.4	34.2
Females	62.5	25.9
All	66.9	29.3

Figure 6
Dental Insurance Coverage by Age and Income Group



While there was some variation in dental insurance coverage by region in both age groups there were substantial differences in rates of dental insurance coverage across PHUs. In the younger age group rates varied from 33.3% to 81.4%, while in the older age group they varied from 9.8% to 58.5% (Table G. Appendix). Many of the estimates for the older age group were qualified.

Dental insurance coverage had some effect on dental visiting among those with their own teeth but a more marked effect on those who had lost all their teeth (Table 11). Analysis of the data by income and dental insurance coverage showed that having insurance had no effect on the probability of a dental visit for high income subjects but did increase the percent visiting for those with middle and low incomes. As anticipated, the lowest rates of visiting were seen in Ontarians from low income households without dental insurance coverage (Table 12).

TABLE 11

TIME SINCE LAST DENTAL VISIT BY DENTAL STATUS
AND DENTAL INSURANCE COVERAGE

Dental Status:	Dentate		Edentulous	
	Yes	No	Yes	No
Insurance Coverage:				
Less than one year	78.0	71.0	25.2	15.2
One to two years	12.4	15.1	18.7	17.5
Three to five years	4.4	6.6	18.4	21.8
Five or more years	5.2	7.3	37.7	45.5

TABLE 12

PERCENT MAKING VISIT WITHIN LAST YEAR BY DENTAL STATUS,
INCOME GROUP AND INSURANCE COVERAGE

Dentate			
Income Group:	Low	Medium	High
Insurance coverage:			
Yes	73.8	75.9	81.2
No	61.6	69.8	81.3
Edentulous			
Income Group:	Low	Medium	High
Insurance coverage:			
Yes	24.1*	25.4	23.0*
No	12.1*	14.4	20.5*

SOCIOECONOMIC AND GEOGRAPHIC INEQUITIES IN ORAL HEALTH

Table 13 shows that income and geographic inequities in the oral health status of older Ontarians are independent. For both age groups there were income gradients in edentulism in all regions and regional differences are observed in all income groups. These data confirm the health disadvantage of elderly low income subjects living in the north of the province: more than two-thirds have lost all their natural teeth.

Similar patterns were also observed for dental visiting (Tables 14 and 15). The lowest reportable rate of visiting was found among elderly low income subjects in the North East (31.2%) and the highest among younger higher income subjects in Central West (77.9%). A similar picture emerges when the data are analyzed for dentate subjects only (Table 15). Again,

the lowest rate of visiting was observed among low income individuals aged 65 years and over living in the North East (49.4%) and the highest among those aged 50-64 years living in high income households in Central West (84.3%).

TABLE 13

PERCENT EDENTULOUS BY AGE, INCOME GROUP AND REGION

Age:	<u>50-64 years</u>			<u>65 years & over</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>	<u>Low</u>	<u>Medium</u>	<u>High</u>
Income:						
Region:						
Southwest	43.4	26.5	9.5*	50.6	36.1	32.5*
Central West	28.1*	21.3	10.1	48.4	36.4	32.3
Central East	27.9*	19.1	11.5	51.6	28.6	28.6
East	39.4*	22.3*	-	49.7	35.4	-
North East	40.9	32.5	20.6	66.2	47.5	37.4*
North West	-	36.2	20.8	72.9	44.7	-

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE 14

PERCENT VISITING A DENTIST IN THE LAST YEAR BY AGE,
INCOME GROUP AND REGION

ALL ONTARIANS						
Age:	50-64 years			65 years & over		
Income Group:	Low	Medium	High	Low	Medium	High
Region:						
SW	35.1*	58.5	75.7	38.0	56.6	65.0
CW	50.0	66.0	77.9	47.8	56.6	67.9
CE	61.5	61.7	75.1	40.9	63.7	69.7
E	38.5	55.9	71.9	42.3	56.1	69.8
NE	47.8	51.9	67.6	31.2	43.7	50.1*
NW	-	47.7	63.8	-	47.7	73.7*

TABLE 15

PERCENT VISITING A DENTIST IN THE LAST YEAR BY AGE,
INCOME GROUP AND REGION

DENTATE ONLY

Age:	50-64 years			65 years & over		
	Low	Medium	High	Low	Medium	High
Income Group:						
Region:						
SW	50.5*	71.0	81.0	58.6	74.6	83.8
CW	61.3	76.1	84.3	71.4	75.3	86.0
CE	72.1	69.0	81.6	69.8	80.9	85.4
E	58.7	63.2	74.6	61.0	74.3	79.2
NE	65.8	63.9	78.2	49.4*	68.2	67.0
NW	-	64.6	76.3	-	73.1	80.8*

Table 16 shows a similar analysis with respect to dental insurance. In all regions and for both age groups, low income Ontarians were the least likely to have coverage. In the case of dental insurance, however, Ontarians in the North were as likely to be covered as those living in other regions.

TABLE 16

PERCENT WITH DENTAL INSURANCE BY AGE,
INCOME GROUP AND REGION

Age:	50-64 years			65 years & over		
	Low	Medium	High	Low	Medium	High
Region:						
SW	31.3*	63.5	83.4	22.1*	34.6	48.6*
CW	48.3	68.7	82.7	22.5	35.0	40.5
CE	45.0	62.4	77.0	19.8	30.5	44.9
E	36.1*	54.2	81.9	-	26.2	38.4
NE	48.3	64.5	80.7	30.1	37.9	44.8*
NW	-	60.7	84.0	-	27.9	-

DISCUSSION AND CONCLUSIONS

Although only a few questions were asked about oral health, the Ontario Health Survey 1990 provides a unique set of information regarding the oral health status of, and use of dental services by, the population of Ontario. This first report has focused on older Ontarians, those aged 50 years and over, among whom patterns of need and demand for dental services are expected to change.

The most dramatic change concerns the proportion of these Ontarians keeping their natural teeth. This is reflected in the OHS data. While two-fifths of those aged 65 years and over have lost all their teeth, this is the case for less than one-fifth of those aged 50 to 64 years. The next generation of elderly people will, then, contain many more individuals with a natural dentition. Since the number of older adults is projected to increase, organized dentistry and health policy makers need to consider the oral health care needs of this section of the population and how they might be met in a cost-effective manner. While oral disorders are rarely fatal, evidence is accumulating of the significant ways in which oral conditions compromise the functional, social and psychological well-being of older adults and the extent to which dental care is a quality of life issue.

The Ontario Health Survey 1990 provides some evidence of the impact of oral conditions of older adults in terms of limitations in ability to chew and pain and other oral symptoms. One-in-seven Ontarians aged 50 to 64 years experienced some limitation in terms of their ability to chew and just over a quarter of those aged 65 years and over were functionally compromised in this way. If only those who have lost all their teeth are considered, two-fifths and one-half, respectively, had problems in this respect. Similarly, just over one-fifth reported one or more pain related oral symptoms in the previous four weeks.

Taken together, data from the Ontario Health Survey 1990 suggest that there are marked inequities in oral health and access to dental services by age, income and geographic location. It was almost always the case that where differences were noted, the most disadvantaged group were elderly low income subjects living in the north of the province.

One issue of some concern, given the Canadian emphasis on equity in access to health

services, is the extent of inequity in dental insurance coverage. While removing the financial barriers to medical care has been a cornerstone of Canadian health policy, financial barriers to the receipt of dental care have not been addressed nationally or provincially. Consequently, dental insurance coverage is more common among younger wealthier individuals than it is among older and poorer persons, reflecting the employment-based system of dental insurance provision.

The effects of this inequity in dental insurance coverage is evident. Among older adults retaining natural teeth, only 61.6% of individuals from low income households without dental insurance had visited a dental care provider in the previous year compared with 81.2% of persons from high income households with insurance. That almost two-thirds of the former had used services is, perhaps, indicative of the value they place on oral health. It is, then, somewhat anomalous in the context of provincial health policy that the poorer members of the community should incur financial costs in pursuing their oral health goals. The challenge with respect to these individuals is to find a mechanism, within the context of fiscal constraint, of ensuring that the most disadvantaged members of the community are able to access appropriate preventive and maintenance care consistent with their oral health needs. In this way, the impact of oral conditions on the functional, social and psychological well-being of older Ontarians can be minimized.

APPENDIX

Table A

POPULATION BASE FROM WHICH ALL SURVEY ESTIMATES WERE DERIVED

Age:	<u>50-64 years</u>	<u>65+ years</u>
ONTARIO	1,367,868	1,136,681
REGION:		
South West	188,113	175,109
Central West	265,304	225,321
Central East	615,499	475,068
East	173,014	163,674
North East	93,200	69,974
North West	32,738	27,535
PHU:		
Algoma	19,879	12,785
Brant	14,940	14,806
Bruce/Grey/Owen Sound	18,034	19,905
Durham	41,403	32,471
East Ontario	22,523	21,567
Elgin-St. Thomas	10,244	10,043
Essex-Windsor	47,580	41,390
Haldimand-Norfolk	12,696	12,312
Haliburton-Kawartha	20,074	23,746
Halton	42,622	27,655
Hamilton-Wentworth	66,066	58,601
Hastings-Prince Edward	18,730	20,110
Huron	7,778	9,006
Kent-Chatham	15,201	14,462
Kingston-Frontenac-Lennox	21,107	19,889
Lambton	18,061	15,258

	<u>50-64 years</u>	<u>65+ years</u>
Leeds-Grenville-Lanark	16,756	20,871
Middlesex-London	49,477	42,379
Muskoka-Parry Sound	9,936	11,463
Niagara	59,785	54,642
North Bay	14,734	11,274
Northwestern	10,175	9,021
Ottawa-Carleton	81,544	68,956
Oxford	12,085	12,002
Peel	83,752	43,108
Perth	9,132	9,523
Peterborough	16,156	17,238
Porcupine	13,023	8,892
Renfrew	12,352	12,281
Simcoe	33,323	34,159
Sudbury	29,566	19,984
Thunder Bay	22,563	18,514
Timiskaming	6,062	5,576
Toronto - East York	15,261	20,503
Toronto - Etobicoke	57,422	52,881
Toronto - North York	101,413	71,627
Toronto - Scarborough	77,071	55,094
Toronto - City	93,319	72,955
Toronto - York	21,514	17,603
Waterloo	44,416	36,786
Wellington-Dufferin-Guelph	24,780	20,519
York Region	54,792	32,800

TABLE B
AGE SPECIFIC RATES OF EDENTULISM
BY REGION AND PHU

Age:	<u>50-64 years</u>	<u>65+ years</u>
REGION:		
South West	22.3	40.9
Central West	17.9	41.1
Central East	15.3	35.1
East	18.8	37.2
North East	29.8	52.7
North West	31.1	49.3
PHU:		
Algoma	29.2	44.1
Brant	21.0	42.8
Bruce/Grey/Owen Sound	20.3	44.3
Durham	18.8*	45.3
East Ontario	33.8	57.0
Elgin-St. Thomas	34.8	52.0
Essex-Windsor	18.0*	43.0
Haldimand-Norfolk	29.6	43.6
Haliburton-Kawartha	29.7	26.0*
Halton	9.8	22.6*
Hamilton-Wentworth	20.2*	49.7
Hastings-Prince Edward	23.1*	39.6
Huron	23.8	35.5
Kent-Chatham	26.8	35.4
Kingston-Frontenac-Lennox	18.0*	34.1
Lambton	15.5*	39.1

Age:	<u>50-64 years</u>	<u>65+ years</u>
Leeds-Grenville-Lanark	19.5*	39.0
Middlesex-London	23.8*	38.8
Muskoka-Parry Sound	22.6*	49.5
Niagara	18.8*	43.7
North Bay	19.4*	46.4
Northwestern	32.5	52.2
Ottawa-Carleton	-	28.9*
Oxford	25.0	46.7
Peel	9.8	48.4*
Perth	25.8*	31.3
Peterborough	25.6	32.6
Porcupine	47.7	62.9
Renfrew	23.5*	46.3
Simcoe	25.3*	42.8
Sudbury	29.3	56.6
Thunder Bay	30.5	47.9
Timiskaming	34.0	60.7
Toronto - East York	17.2*	30.2
Toronto - Etobicoke	10.7*	39.0
Toronto - North York	-	25.3*
Toronto - Scarborough	-	-
Toronto - City	-	37.4
Toronto - York	19.4*	47.0
Waterloo	13.4*	36.6
Wellington-Dufferin-Guelph	23.9*	41.0
York Region	-	42.4*

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE C
DENTURE STATUS BY AGE AND REGION

Age:	<u>50-64 years</u>				<u>65+ years</u>			
Status:	<u>D</u>	<u>DD</u>	<u>ED</u>	<u>E</u>	<u>D</u>	<u>DD</u>	<u>ED</u>	<u>E</u>
Region:								
Southwest	44.4	33.3	21.2	-	26.8	32.4	39.3	-
Central West	42.0	40.1	17.4	-	22.7	36.2	39.4	-
Central East	42.5	42.2	-	-	22.8	42.1	33.6	-
East	41.7	39.5	17.4	-	23.6	39.2*	35.7*	-
Northeast	31.3	38.9	28.6	-	18.5	28.8	50.5	-
Northwest	29.6	39.3	30.2	-	19.2	31.5	48.3	-

D - dentate, no dentures

DD - dentate with one or more dentures/bridges

ED - edentulous with one or more dentures

E - edentulous with no dentures

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE D

PERCENT OF DENTATE AND EDENTULOUS PERSONS WITH LIMITATIONS
IN CHEWING ABILITY BY AGE AND GEOGRAPHIC REGION

Age:	<u>50-64 years</u>		<u>65+ years</u>	
	<u>Dent.</u>	<u>Edent.</u>	<u>Dent.</u>	<u>Edent.</u>
ONTARIO	8.0	42.3	15.3	47.7
REGION:				
South West	7.0	42.6	13.6	48.4
Central West	8.0	42.5	12.1	49.1
Central East	8.6	42.4	16.7	48.1
East	7.0*	42.2	16.3	45.9
North East	8.9	42.9	17.3	49.2
North West	-	38.5	-	31.8*
PHU:				
Algoma	-	35.1*	-	40.1*
Brant	-	32.6*	-	57.3
Bruce/Grey/Owen Sound	-	-	21.0*	46.4
Durham	-	-	-	48.5*
East Ontario	-	36.7*	-	41.2
Elgin-St. Thomas	-	40.1*	-	37.1
Essex-Windsor	-	55.6*	-	56.0
Haldimand-Norfolk	-	-	-	49.9
Haliburton-Kawartha	-	41.0*	-	43.8*
Halton	-	-	-	60.4*
Hamilton-Wentworth	-	-	-	37.6
Hastings-Prince Edward	-	-	-	40.0*
Huron	-	-	-	-
Kent-Chatham	-	-	-	53.6
Kingston-Frontenac-Lennox	-	37.4*	-	48.9*
Lambton	-	-	-	48.5

Age:	<u>50-64 years</u>		<u>65+ years</u>	
	<u>Dent.</u>	<u>Edent.</u>	<u>Dent.</u>	<u>Edent.</u>
Leeds-Grenville-Lanark	-	-	-	39.3*
Middlesex-London	-	-	-	44.2*
Muskoka-Parry Sound	-	35.6*	-	51.6
Niagara	-	62.5	-	53.6
North Bay	-	-	-	43.3*
Northwestern	-	36.2*	-	39.9
Ottawa-Carleton	-	-	-	52.7*
Oxford	-	63.7	-	51.3
Peel	-	-	-	-
Perth	-	31.3*	-	58.5
Peterborough	-	51.2*	18.6*	55.3
Porcupine	-	39.8*	-	52.1
Renfrew	-	47.3*	26.6*	47.1
Simcoe	-	46.3*	-	50.6
Sudbury	-	55.8	-	52.6
Thunder Bay	-	39.6*	-	-
Timiskaming	15.7*	41.6	11.2*	53.5
Toronto - East York	-	-	17.3*	50.3
Toronto - Etobicoke	-	-	-	55.4
Toronto - North York	-	59.9*	-	-
Toronto - Scarborough	-	-	-	-
Toronto - City	-	-	-	46.6*
Toronto - York	-	47.2*	29.0*	49.4
Waterloo	-	-	15.1*	55.5
Wellington-Dufferin-Guelph	-	52.7*	-	49.5
York Region	-	-	-	-

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE E
 PERCENT WITH ONE OR MORE ORAL SYMPTOMS
 BY AGE AND PHU

Age:	50-64 years	65+ years
PHU:		
Algoma	24.4*	22.2*
Brant	31.7	17.7
Bruce/Grey/Owen Sound	27.2	21.9
Durham	31.1	24.0*
East Ontario	34.7	21.7
Elgin-St. Thomas	31.7	20.0*
Essex-Windsor	18.9*	-
Haldimand-Norfolk	27.3	19.2*
Haliburton-Kawartha	33.8	23.3
Halton	33.5	16.7*
Hamilton-Wentworth	25.8	21.9
Hastings-Prince Edward	25.1	15.7*
Huron	25.7	13.5*
Kent-Chatham	25.4	18.5
Kingston-Frontenac-Lennox	28.0	24.6*
Lambton	24.0	19.8*
Leeds-Grenville-Lanark	29.7	17.3*
Middlesex-London	29.5	21.4*
Muskoka-Parry Sound	30.2	24.4
Niagara	31.2	25.1
North Bay	30.9	21.5*
Northwestern	31.4	25.1*
Ottawa-Carleton	35.3	28.7*
Oxford	31.3	20.2*

Age:	<u>50-64 years</u>	<u>65+ years</u>
Peel	31.7*	-
Perth	36.0	18.7*
Peterborough	25.6	16.1*
Porcupine	30.9	27.1*
Renfrew	29.6	18.7*
Simcoe	29.2	21.7*
Sudbury	29.4	28.9
Thunder Bay	34.5	18.9*
Timiskaming	34.3	21.5
Toronto - East York	23.7	21.1*
Toronto - Etobicoke	24.5	24.4
Toronto - North York	28.3	21.4*
Toronto - Scarborough	35.2	22.3*
Toronto - City	35.7	23.5*
Toronto - York	38.6	21.6*
Waterloo	36.3	20.8*
Wellington-Dufferin-Guelph	29.4	17.5*
York Region	26.1*	-

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE F

PERCENT VISITING A DENTAL CARE PROVIDER IN THE
PREVIOUS YEAR BY DENTAL STATUS, REGION AND PHU

	<u>Dentate</u>	<u>Edentulous</u>
REGION:		
South West	74.1	19.2
Central West	77.5	17.9
Central East	76.4	19.4
East	70.6	18.5
North East	67.8	18.9
North West	72.0	18.1
PHU:		
Algoma	75.4	-
Brant	70.1	-
Bruce/Grey/Owen Sound	69.8	15.6*
Durham	81.3	-
East Ontario	69.6	-
Elgin-St. Thomas	68.3	14.1*
Essex-Windsor	71.9	-
Haldimand-Norfolk	73.6	-
Haliburton-Kawartha	77.6	-
Halton	80.9	-
Hamilton-Wentworth	79.4	22.4*
Hastings-Prince Edward	68.1	-
Huron	76.7	15.0*
Kent-Chatham	66.9	-
Kingston-Frontenac-Lennox	72.2	-
Lambton	82.8	-

	<u>Dentate</u>	<u>Edentulous</u>
Leeds-Grenville-Lanark	63.5	-
Middlesex-London	74.9	-
Muskoka-Parry Sound	71.6	-
Niagara	77.3	17.5*
North Bay	71.7	-
Northwestern	67.7	-
Ottawa-Carleton	73.9	-
Oxford	76.7	23.8*
Peel	75.4	-
Perth	82.6	-
Peterborough	74.1	-
Porcupine	51.4	20.4*
Renfrew	59.8	-
Simcoe	76.8	-
Sudbury	64.9	18.7*
Thunder Bay	73.8	-
Timiskaming	60.8	14.8*
Toronto - East York	74.8	26.1*
Toronto - Etobicoke	83.1	-
Toronto - North York	81.8	-
Toronto - Scarborough	75.6	-
Toronto - City	71.9	-
Toronto - York	68.5	-
Waterloo	79.0	-
Wellington-Dufferin-Guelph	70.2	-
York Region	68.0	-

* Denotes qualified estimate

- Denotes estimate cannot be released

TABLE G

PERCENT WITH DENTAL INSURANCE COVERAGE
BY AGE, REGION AND PHU

Age:	<u>50-64 years</u>	<u>65+ years</u>
REGION:		
South West	64.9	31.6
Central West	71.4	28.6
Central East	66.9	30.4
East	63.8	24.1
North East	64.7	34.3
North West	66.8	20.9
PHU:		
Algoma	69.3	32.9*
Brant	61.9	18.5
Bruce/Grey/Owen Sound	47.4	15.8*
Durham	72.5	32.8*
East Ontario	44.4	15.7*
Elgin-St. Thomas	47.3	15.5*
Essex-Windsor	81.4	58.5
Haldimand-Norfolk	51.8	-
Haliburton-Kawartha	61.3	34.5
Halton	77.1	32.1*
Hamilton-Wentworth	76.5	42.2
Hastings-Prince Edward	54.6	20.8*
Huron	33.3	9.8*
Kent-Chatham	56.2	20.2*
Kingston-Frontenac-Lennox	58.5	20.7*
Lambton	73.3	26.9*

Age:	<u>50-64 years</u>	<u>65+ years</u>
Leeds-Grenville-Lanark	52.0	25.3*
Middlesex-London	67.3	33.8
Muskoka-Parry Sound	45.0	21.4*
Niagara	69.8	33.2
North Bay	56.7	23.4*
Northwestern	61.3	-
Ottawa-Carleton	75.9	29.6*
Oxford	61.0	22.0
Peel	66.3	-
Perth	51.3	-
Peterborough	64.3	25.7
Porcupine	60.2	31.7*
Renfrew	57.8	17.4*
Simcoe	53.8	28.6
Sudbury	77.4	55.7
Thunder Bay	69.3	24.9
Timiskaming	48.1	13.9*
Toronto - East York	67.1	32.0
Toronto - Etobicoke	70.2	28.7
Toronto - North York	72.4	24.7*
Toronto - Scarborough	70.2	33.5*
Toronto - City	66.7	36.5*
Toronto - York	63.7	22.3*
Waterloo	78.5	17.8*
Wellington-Dufferin-Guelph	54.8	-
York Region	57.6	-

* Denotes qualified estimate

- Denotes estimate cannot be released