# Outpatient health services use by children in Ontario

## Research Atlas

ICES Institute for Clinical Evaluative Sciences

# Outpatient Health Services Use by Children in Ontario


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## Key Terms & Concepts

- **outpatient health services utilization**
- **pediatric population**
- **health services delivery**
- **annual volume of services**
- **annual health services expenditures**
- **health service use trends over time**



## Key Messages

- ✔ **Despite a seven per cent increase in the number of children in Ontario, there was an 11 per cent decrease in pediatric OHIP billing volume between 1991/92 and 1997/98.**
- ✔ **Total OHIP expenditures on outpatient health services decreased from $677 million in 1991/92 to $638.2 million in 1997/98, representing a 5.7 per cent reduction in government spending.**
- ✔ **Between 1991/92 and 1997/98, annual per capita OHIP expenditures decreased from $241 to $212 per child—a 17 per cent decrease.**
- ✔ **Close to 70 per cent of the 1997/98 OHIP expenditures were for physician consultations or visits, including office, emergency room or home visits.**

# Background

There is an increasing emphasis on fiscal cost containment in health care and a movement toward more efficient models of health care delivery in the last decade as exemplified by shortened inpatient lengths of stay and outpatient surgical procedures. The current climate of health care reform and health services restructuring focuses on meeting the needs of a shifting demographic represented by an aging population. However, to ensure that available health services meet the needs of all segments of the population, studies of trends in health service use must focus on all age groups. This report describes health service use by children under 20 years of age by examining Ontario Health Insurance Plan (OHIP) data from fiscal years 1991/92 to 1997/98. Various categories of health service use are studied for children aged less than one year, one to four years, five to 14 years and 15 to 19 years.

# Methods

The OHIP fee-for-service codes were grouped into the following broad categories: diagnostic and therapeutic procedures, hospital visits, laboratory medicine, obstetrics, office/emergency room/home visits/consults, surgery and other. The total billing volume (number of claims) for each category was calculated for 1991/92 through 1997/98 for each age group. In addition to billing volume, the price-adjusted billings for each year were calculated by multiplying billing volume by a standard price for tests and procedures according to the 1997/98 OHIP Schedule of Benefits and Fees (see Technical Appendix).

# Interpretive Cautions

The Hospital for Sick Children (HSC) in Toronto started an Alternative Fee-for-service Payment Plan (AFP) in 1989 for basic pediatric services. These claims were submitted to OHIP as "shadow billings" for administrative purposes only. In 1994 the AFP was extended to sub-specialty pediatric services. The claims for these services were not required to be submitted to OHIP as shadow billings. As of 1997/98, the HSC shadow billing submitted to OHIP accounted for 6.3 per cent of the total pediatric billing volumes and a corresponding 4.1 per cent of the cost. For completeness, these billings were included in this report. However, this may underestimate the total pediatric volume and billings if shadow billing is incomplete.

# Findings and Discussion

Children in Ontario make up 28 per cent of the total population. Between 1991/92 and 1997/98 the number of children in Ontario aged under 20 years increased from 2,809,480 to 3,007,960, an increase of 7.1 per cent (Exhibit 1). All age groups showed an increase except infants under one year, which decreased by 8.2 per cent. The age group demonstrating the largest increase was the five to 14 year-olds, which increased by 11.8 per cent.

Apart from a small increase in the early 1990s, pediatric OHIP billing volume has gradually decreased since 1994/95, despite the overall increase in the number of children in the province. In 1997/98, price-adjusted OHIP billings for pediatric services totalled $638.2 million, representing an overall 5.7 per cent decrease in expenditures since 1991/92 (Exhibit 2). This trend is also reflected in the actual volume of billings (10.6% decrease from 1991/92 to 1997/98, Exhibit 3). Given the growth of the pediatric population since 1991/92, this reflects an overall decrease in per capita OHIP expenditures from $240.8 to $212.2—a 11.9 per cent decrease in seven years (Exhibit 2). The opposing trends of population growth and decline in OHIP expenditures are depicted in Exhibit 4.

Close to 70 per cent of the 1997/98 OHIP expenditures were for physician consultations or visits, including office, emergency room (ER) or home visits, and 13 per cent were for diagnostic and therapeutic tests and procedures (Exhibit 5). Although there was a 4.8 per cent decrease in the volume of billings for diagnostic and therapeutic tests and procedures (Exhibit 6), there was an increase of over $6 million (8.1%) in expenditures (Exhibit 5). Diagnostic tests for allergy (such as patch and skin tests) contributed to almost half of all claims within the category of diagnostic and therapeutic tests in 1991/92 and 1997/98.

The decrease in volume of allergy tests alone accounted for most of the decline in claims volume for diagnostic and therapeutic tests between 1991/92 to 1997/98. On the other hand, there were increases in use and expenditure on diagnostic ultrasound and critical care procedures, including those in intensive care and neonatal intensive care. This finding was also reflected in the number of claims submitted by radiologists, which increased for children under one-year old between 1992/93 and 1997/98. The volume of claims from all other medical specialties decreased over the study period in all age groups. In addition to diagnostic ultrasound, the number of claims for therapeutic procedures for critical care increased from 1991/92 to 1997/98. These two areas of increase accounted for most of the increase in expenditures for diagnostic and therapeutic procedures. It is important for future research to study the impact of these services on accuracy

of diagnosis and effectiveness of treatment. As reported in the last ICES Practice Atlas, expenditures in surgery and hospital visits showed a gradual decrease.[1] The following sections give a detailed profile of the pediatric services billed to OHIP and the corresponding expenditures from 1991/92 to 1997/98 by age group.

## Infants (Under One Year of Age)

The total OHIP expenditures in this age group amounted to $82.8 million dollars in 1997/98, representing a 9.0 per cent decrease from the $91.0 million expenditures in 1991/92. The volume of billings in every fee code category have been declining since 1991/92. Correspondingly, expenditures in every category showed a decline as well, except for diagnostic and therapeutic testing, in which a 31.7 per cent increase occurred despite a 2.5 per cent decrease in billing volume. Surgery expenditures decreased substantially from $5.5 million in 1991/92 to $2.0 million in 1997/98, representing a 63.8 per cent reduction. Expenditures in outpatient/ER visits and consultations and hospital visits dropped by $4.8 and $2.0 million respectively (7.8% and 15.3% decrease). These reductions accounted for most of the decrease in expenditures observed among this age group. The overall decrease in OHIP claims and expenditures can be largely explained by the 8.2 per cent decrease in population in infants under one year of age. However, the per capita expenditure for this age group showed the smallest drop since 1991/92 compared to the other age groups and remained the highest among all children, $589.70 in 1997/98. The majority of the expenditures were related to outpatient assessments and visits to consultants (68.8% in 1997/98) and in 1997/98, 89.3 per cent of all expenditures in this age group were billed by a general/family practitioner (47.2%) or a pediatrician (42.1%).

## Preschoolers (Aged One to Four Years)

The total OHIP expenditures in this age group amounted to $148.1 million in 1997/98, representing a 9.2 per cent decrease from $163.1 million in 1991/92. Surgery, hospital visits and laboratory medicine expenditures showed substantial decreases from 1991/92 (28.0%, 20.6% and 18.9% relative decreases respectively). Expenditures for diagnostic and therapeutic procedures showed an 11.5 per cent increase from 1991/92. In 1997/98 the per capita expenditure for this age group was $243.70, representing the biggest absolute dollar decline among all children. As with infants, most of the reduction in expenditures was due to reduced outpatient assessments and visits to consultants. These health services comprised the majority (78.8%) of the expenditures among the preschool children in 1997/98. In 1997/98, 60.2 per cent of all expenditures were billed by a general/family practitioner and 21.2 per cent by a pediatrician.

## School Age Children (Aged 5 to 14)

Children aged five to 14 years comprised 49 per cent of the Ontario population of children under 20 years of age in 1991. This age group demonstrated an 11.8 per cent increase in population, accounting for 51 per cent of all children in 1997. Between 1991/92 and 1994/95, OHIP expenditures increased and subsequently decreased, resulting in a negligible net change in total OHIP expenditures between 1991/92 and 1997/98, with 1997/98 expenditures totaling $247.9 million. The $5.9 million increase in expenditures for physician consultations plus diagnostic and therapeutic tests and procedures between 1991/92 and 1997/98 was offset by a $3.6 million reduction in costs related to surgery and a $2.0 million reduction in the cost of laboratory services. The reductions may reflect initiatives directed at improving the efficiency of hospital-related care and referrals for laboratory testing. As with younger children, the majority of the expenditures were related to outpatient assessments and consultations (70.4% of all OHIP expenditures in 1997/98). The average per capita expenditure for children aged five to 14 years was $162 in 1997/98—the lowest average per capita expenditure among children of all age groups. In 1997/98, 47.1 per cent of all expenditures were billed by a general/family practitioner and 17.7 per cent by a pediatrician.

## Youth (Aged 15 to 19)

Children aged 15 to 19 years comprised 25 per cent of children under 20 years of age in 1991. Although this age group demonstrated a 2.9 per cent increase in size, they accounted for only 24 per cent of all children in 1997. Between 1991/92 and 1997/98 OHIP expenditures in this age group decreased steadily, resulting in reductions of 8.4 per cent and 9.2 per cent for girls and boys respectively. Among the youths, services for females accounted for 62 per cent of OHIP expenditures in 1997/98, $98.2 million for girls and $61.3 million for boys. Expenditures for physician consultations decreased by $3.7 million for girls and by $3.5 million for boys between 1991/92 and 1997/98 while the costs associated with diagnostic and therapeutic tests and procedures were relatively unchanged for girls and boys. Reductions in the cost of laboratory services of $3.1 million for girls and $1.2 million for boys were observed as well as reductions in the cost of surgery of $2.0 million for girls and $1.7 million for boys. As with the younger age groups, the majority of the expenditures were related to outpatient assessments and consultations (56.9% of all OHIP expenditures in 1997/98 for girls and 58.9% for boys). The average per capita expenditure for girls ($276.70)

was 1.7 times higher than expenditures for boys ($163.50) in 1997/98. This age group exhibited the largest decline in per capita expenditures. In 1997/98, 45.3 per cent of all expenditures were billed by a general/family practitioner.

# Conclusions

This report on outpatient health services use shows a decline in outpatient health services use despite a seven per cent increase in the size of the population of children during the study period. The Atlas Report on hospital use among children in Ontario[2] showed a decrease in medical and surgical admissions from 1991/92 to 1997/98. This overall decline in hospital use may be partly due to changes in admission thresholds, diminished number of beds, the establishment of observation units and other health services delivery reforms. With the declining trend in hospitalization, one might have expected a compensatory increase in outpatient health services use. The opposite was observed. The decreasing rates in hospitalization and in outpatient health services use underscore the need for future research to examine how these reductions impact on children's health.

One indicator of changes in access to health services is the use of urgent care, such as emergency room visits. This was not addressed directly in this report. The coding of emergency room visit use in OHIP claims files is inadequate for epidemiological research due to the frequent use of routine outpatient physician visit fee codes rather than specialized emergency department fee codes.[3] The rate of emergency department visits by pediatric patients has not been measured in Ontario and remains an important research question.

The implications of these findings include a possible contraction of the public health care system. Reductions in hospitalizations and outpatient services may be associated with increased expenditures elsewhere, either as a direct result of these changes or as a parallel shift. For example, per capita medication expenditures have been increasing in Canada since 1975.[4] New initiatives in community and home care are shifting the delivery of health services outside of public institutions to community agencies and families. Policies that promote privatization and increased use of alternative/complementary health care will also shift the financial responsibility for health care away from the public system and onto employers and private citizens. The extent of these shifts and their implications for providing health care services must be assessed and closely monitored to ensure that the quality of care is not compromised and the health of children is not negatively affected.[5-7] Investigations are required to examine whether reductions in public health service are a result of impaired access in the pediatric population and whether the shifts in the provision of services described above will improve or reduce access to care.[8] Ultimately, benchmark research is required to determine the level of care necessary to ensure the good health of children in Ontario.[9,10]

## Acknowledgement

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## Exhibit 1: Population Change over Time, in Children Aged 0 to 19 Years in Ontario, 1991 to 1997

**Population**

| Age Group | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | % Change from 1991 to 1997 |
|---|---|---|---|---|---|---|---|---|
| **< 1** | 152,970 | 152,060 | 148,950 | 147,260 | 147,980 | 147,830 | 140,400 | -8.2 |
| **1-4** | 578,720 | 595,940 | 608,580 | 612,830 | 609,350 | 608,460 | 607,480 | 5.0 |
| **5-14** | 1,368,520 | 1,397,860 | 1,421,160 | 1,447,870 | 1,474,310 | 1,500,970 | 1,530,240 | 11.8 |
| **15-19 Female** | 343,330 | 341,440 | 339,930 | 342,450 | 345,690 | 350,380 | 354,830 | 3.3 |
| **15-19 Male** | 365,940 | 362,160 | 359,560 | 362,590 | 366,130 | 371,250 | 375,010 | 2.5 |
| **Total** | **2,809,480** | **2,849,460** | **2,878,180** | **2,913,000** | **2,943,460** | **2,978,890** | **3,007,960** | **7.1** |
| **% Change from 1991** | | 1.4 | 2.4 | 3.7 | 4.8 | 6.0 | 7.1 | |
| **% Change per year** | | 1.4 | 1.0 | 1.2 | 1.0 | 1.2 | 1.0 | |

**Exhibit Highlights**

- ✔ Between 1991/92 and 1997/98 the total population of children under 20 years increased 7.1%.
- ✔ All age groups showed an increase except infants under one year, which decreased by 8.2%.
- ✔ Five to 14 year-olds demonstrated the largest increase, 11.8%.

*Data Source: Ontario Census Data*

## Exhibit 2: Ontario Health Insurance Plan Expenditures in Children Aged 0 to 19 Years in Ontario, 1991/92 to 1997/98

**Price-adjusted Billings ($ Millions)**

| Age Group | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | % Change from 1991/92 to 1997/98 |
|---|---|---|---|---|---|---|---|---|
| < 1 | 91.0 | 92.6 | 92.0 | 84.5 | 85.4 | 82.2 | 82.8 | -9.0 |
| 1-4 | 163.1 | 168.7 | 172.5 | 164.3 | 161.6 | 150.1 | 148.1 | -9.2 |
| 5-14 | 247.8 | 256.3 | 259.4 | 259.1 | 254.1 | 239.3 | 247.9 | 0.0 |
| 15-19 Female | 107.2 | 107.9 | 105.0 | 102.5 | 100.2 | 96.3 | 98.2 | -8.4 |
| 15-19 Male | 67.5 | 66.7 | 64.8 | 63.3 | 62.2 | 60.1 | 61.3 | -9.2 |
| **Total** | **676.6** | **692.2** | **693.7** | **673.7** | **663.5** | **627.9** | **638.2** | **-5.7** |
| % Change from 1991/92 | | 2.3 | 2.5 | -0.4 | -1.9 | -7.2 | -5.7 | |
| % Change per year | | 2.3 | 0.2 | -3.0 | -1.5 | -5.7 | 1.6 | |

**Per Capita Price-adjusted Billings ($)**

| Age Group | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | % Change from 1991/92 to 1997/98 |
|---|---|---|---|---|---|---|---|---|
| < 1 | 594.8 | 609.2 | 617.5 | 573.7 | 577.1 | 556.0 | 589.7 | -0.9 |
| 1-4 | 281.8 | 283.0 | 283.5 | 268.1 | 265.1 | 246.6 | 243.7 | -13.5 |
| 5-14 | 181.1 | 183.4 | 182.5 | 179.0 | 172.3 | 159.4 | 162.0 | -10.5 |
| 15-19 Female | 312.3 | 315.9 | 308.8 | 299.3 | 290.0 | 274.8 | 276.7 | -11.4 |
| 15-19 Male | 184.4 | 184.1 | 180.2 | 174.7 | 169.7 | 161.9 | 163.5 | -11.4 |
| **Total** | **240.8** | **242.9** | **241.0** | **231.3** | **225.4** | **210.8** | **212.2** | **-11.9** |
| % Change from 1991/92 | | 0.9 | 0.1 | -4.0 | -6.4 | -12.5 | -11.9 | |
| % Change per year | | 0.9 | -0.8 | -4.1 | -2.6 | -6.9 | 0.7 | |

*Data Source: Ontario Health Insurance Plan*

**Exhibit Highlights**

- ✔ In 1997/98, OHIP expenditures were $638.2 million, a 5.7% decrease since 1991/92.
- ✔ Per capita expenditures decreased from $241 to $212 per child, a reduction of 11.9%.

## Exhibit 3: Ontario Health Insurance Plan Billing Volumes in Children Aged 0 to 19 Years in Ontario, 1991/92 to 1997/98

### Claims Volume (in 10,000)

| Age Group | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | % Change from 1991/92 to 1997/98 |
|---|---|---|---|---|---|---|---|---|
| < 1 | 400.7 | 444.0 | 428.3 | 372.6 | 369.5 | 374.2 | 342.7 | -14.5 |
| 1-4 | 855.1 | 912.2 | 917.7 | 856.6 | 826.2 | 768.2 | 779.2 | -8.9 |
| 5-14 | 1,578.1 | 1,632.4 | 1,635.8 | 1,618.0 | 1,564.0 | 1,436.4 | 1,463.9 | -7.2 |
| 15-19 Female | 677.6 | 680.8 | 653.2 | 631.3 | 604.8 | 571.9 | 575.5 | -15.1 |
| 15-19 Male | 411.3 | 406.2 | 390.2 | 376.5 | 363.3 | 344.7 | 346.3 | -15.8 |
| **Total** | **3,922.7** | **4,075.5** | **4,025.1** | **3,855.1** | **3,727.8** | **3,495.3** | **3,507.6** | **-10.6** |
| % Change from 1991/92 | | 3.9 | 2.6 | -1.7 | -5.0 | -10.9 | -10.6 | |
| % Change per year | | 3.9 | -1.3 | -4.4 | -3.4 | -6.7 | 0.4 | |

### Per Capita Claims Volume

| Age Group | 1991/92 | 1992/93 | 1993/94 | 1994/95 | 1995/96 | 1996/97 | 1997/98 | % Change from 1991/92 to 1997/98 |
|---|---|---|---|---|---|---|---|---|
| < 1 | 26.2 | 29.2 | 28.8 | 25.3 | 25.0 | 25.3 | 24.4 | -6.8 |
| 1-4 | 14.8 | 15.3 | 15.1 | 14.0 | 13.6 | 12.6 | 12.8 | -13.2 |
| 5-14 | 11.5 | 11.7 | 11.5 | 11.2 | 10.6 | 9.6 | 9.6 | -17.0 |
| 15-19 Female | 19.7 | 19.9 | 19.2 | 18.4 | 17.5 | 16.3 | 16.2 | -17.8 |
| 15-19 Male | 11.2 | 11.2 | 10.9 | 10.4 | 9.9 | 9.3 | 9.2 | -17.8 |
| **Total** | **14.0** | **14.3** | **14.0** | **13.2** | **12.7** | **11.7** | **11.7** | **-16.5** |
| % Change from 1991/92 | | 2.4 | 0.2 | -5.2 | -9.3 | -16.0 | -16.5 | |
| % Change per year | | 2.4 | -2.1 | -6.1 | -3.9 | -8.5 | 0 | |

*Data Source: Ontario Health Insurance Plan*

**Exhibit Highlights**

- ✔ In 1997/98, OHIP billing volume was 35,070,000 claims, a 10.6% decrease since 1991/92.
- ✔ Per capita billing volume decreased from 14 to 12 claims per child, a reduction of 16.5%.

## Exhibit 4: Growth of Population of Children and Ontario Health Insurance Plan Expenditures in Ontario, 1991/92 to 1997/98

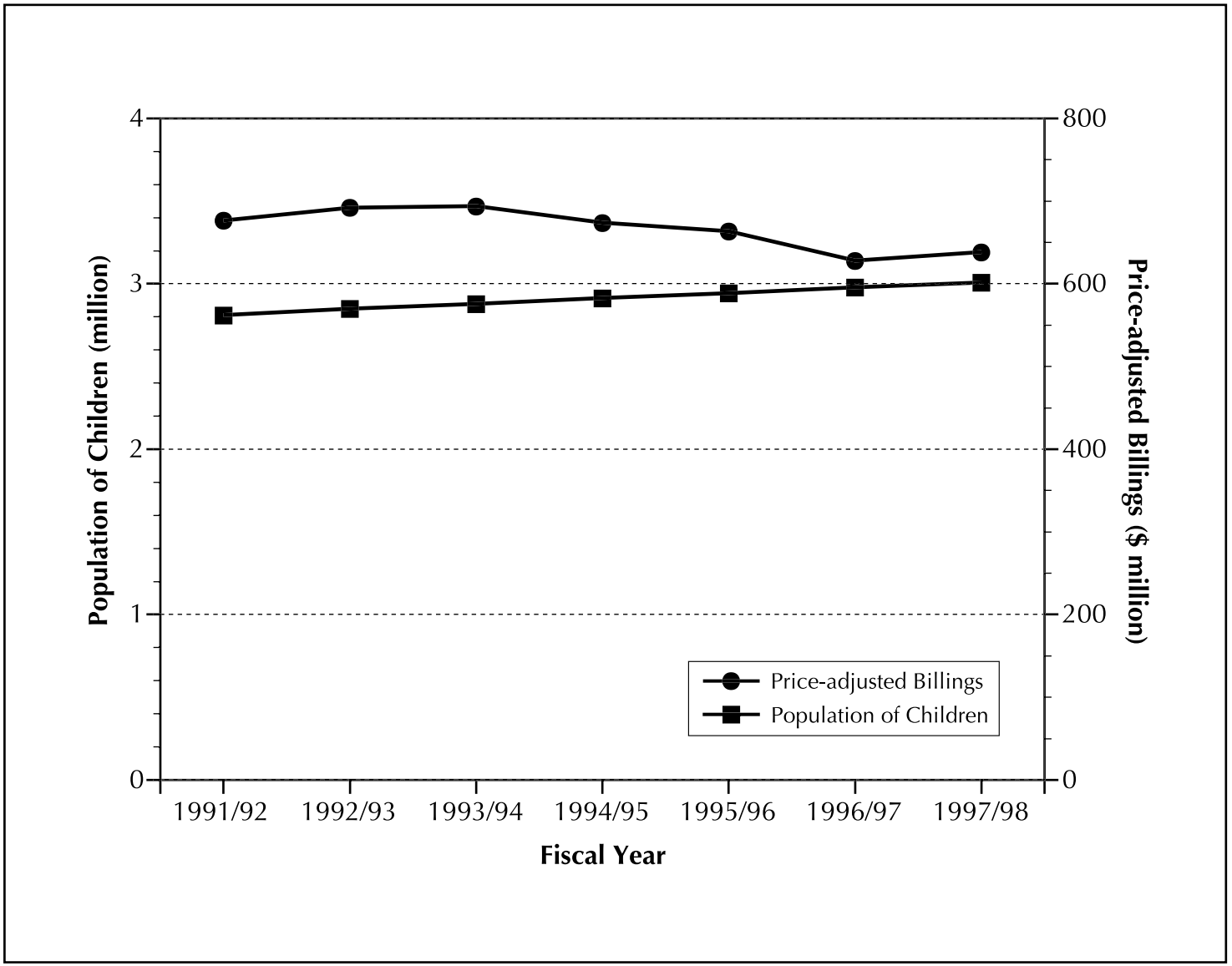


**Exhibit Highlights**

✔ Despite a population increase of 7.1%, OHIP expenditures declined by 5.7% between 1991/92 and 1997/98.

*Data Source: Ontario Health Insurance Plan*

## Exhibit 5: Distribution of Pediatric Ontario Health Insurance Plan Expenditures in Ontario, 1991/92 to 1997/98

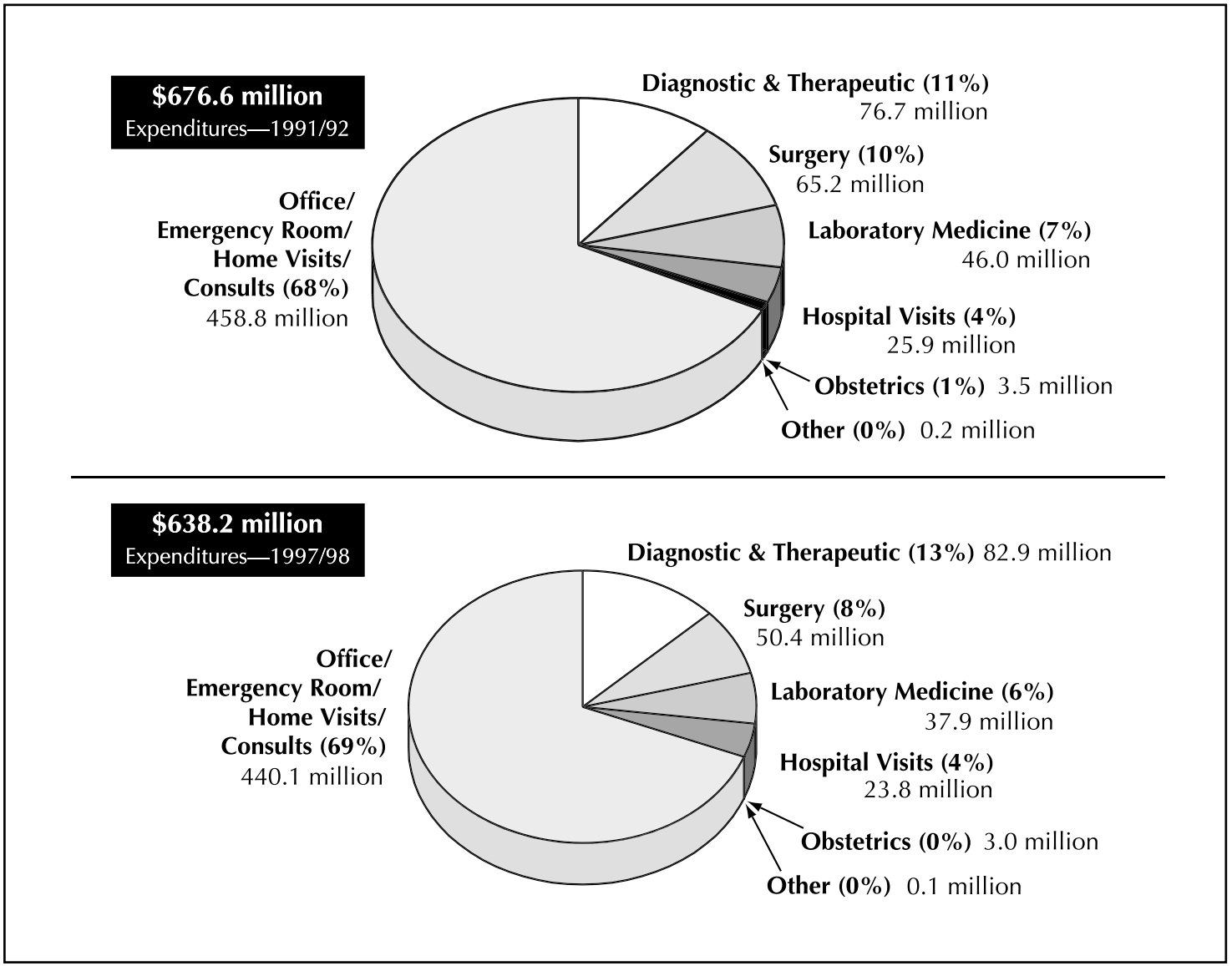


**Exhibit Highlights**

- ✔ 69% of 1997/98 OHIP expenditures were for physician consultations and visits.
- ✔ Expenditures for diagnostic and therapeutic procedures increased by $6.2 million (8.1%) from 1991/92 to 1997/98.

*Data Source: Ontario Health Insurance Plan*

## Exhibit 6: Distribution of Pediatric Ontario Health Insurance Plan Claims in Ontario, 1991/92 to 1997/98

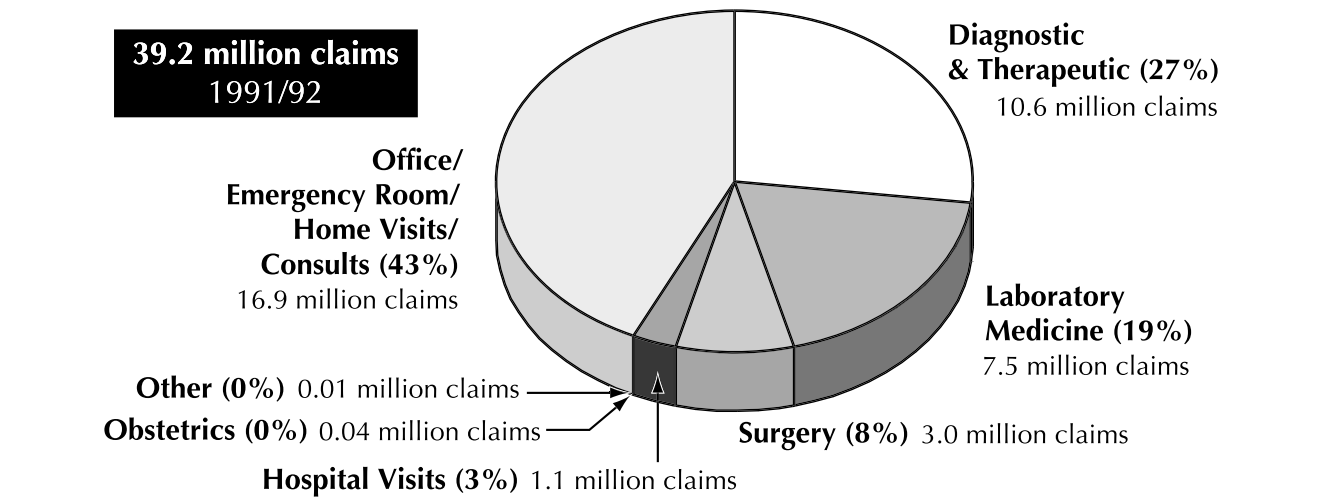


**Exhibit Highlights**

- ✔ 45% of 1997/98 OHIP claims were for physician consultations and visits.
- ✔ Claims volume for diagnostic and therapeutic procedures decreased by 509,000 claims (4.8%) from 1991/92 to 1997/98.

*Data Source: Ontario Health Insurance Plan*

# Glossary

**outpatient health services utilization**
outpatient health services utilization refers to the use of health care services that occurs outside of a hospital admission. It may include visits to doctors and other health care professionals, laboratory tests, home care visits and visits to emergency departments and walk-in clinics.

**pediatric population**
the pediatric population in Ontario includes neonates, infants, children and adolescents. The age group spans from birth to 19 years.

**health services delivery**
health services delivery refers to the ways in which health care professionals provide care to the Ontario patient population and the manner in which these services are organized.

**annual volume of services**
the number of a particular type of health service or a category of service provided over the course of one fiscal year, is aggregated over the Ontario pediatric population to determine the annual volume of that service or group of services for the population.

**annual health services expenditures**
the physician billings, in dollars, for a particular type of health service or for a category of service provided over the course of one fiscal year, is aggregated over the Ontario pediatric population to determine the annual expenditures for that service or group of services for the population.

**health service use trends over time**
examining how the number of claims or the total billing for a particular service changes over several years provides an indication of how the health care market may be changing over time. Changes can occur as a result of demographic shifts, changes in medical practice, changes in patient behaviour and changes in provincial health policies and fee schedules.

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# Technical Appendix

## Data Sources

The Ontario Health Insurance Plan (OHIP) database provides comprehensive information on the services provided by Ontario fee-for-service physicians who submit claims for reimbursement and by other physicians who submit shadow bills. The database records each patient encounter, including the fee code for each service performed, the date of the service and the diagnosis related to the encounter.

Census Canada data were used to determine population estimates for each pediatric age group for the calculation of per capita claims volume and billing expenditures for each year.

## Calculation of Price-adjusted Billings

To adjust for prices, a standard price for each fee code was calculated by dividing the total amount billed for that fee code in 1997/98 by the number of services billed for that fee code in 1997/98.[11] The price-adjusted billings for a given service in Year Y were the total number of services in Year Y multiplied by the standard price for the selected fee code. Special adjustments were made to correct for fee codes that were de-listed or added during the study period.[11]

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