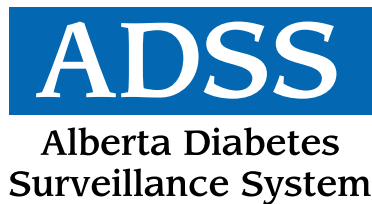


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## Health Care Costs for Children and Adults with Diabetes by Alberta Health Zone

**D**ifferences in health care utilization have been reported across and within several Canadian jurisdictions. Emergency department encounters, for example, may be higher in rural populations than urban, whereas physician visits (to specialists, in particular), may be lower in rural areas where access can be limited. Differences in the mix of healthcare resources consumed can translate into variations in cost. Using data from the Alberta Diabetes Surveillance

**Total costs (physician, hospital and emergency costs) for people with diabetes were 3-4 times higher than costs for people without diabetes.**

System (ADSS), we looked at average health care costs for physician visits (general practitioner and all specialists combined), emergency department encounters and hospitalizations across Alberta's five health zones. We also determined the contribution of each category to the sum of those costs. Furthermore, we reported these data separately for the population under the age of 20 (children and adolescents) and for those aged 20 years and over (adults) for 2007.

### The Alberta Diabetes Atlas 2009

Albertans now have at their fingertips the **Alberta Diabetes Atlas 2009**, a comprehensive picture of people living with diabetes in the province. This Atlas is a product of the Alberta Diabetes Surveillance System (ADSS), a partnership between the Institute of Health Economics (IHE) and Alberta Health and Wellness (AHW).

The 2009 Atlas is the second atlas produced by the ADSS, and new sections include: epidemiological trends for children and adolescents; health care utilization costs of diabetes; and health care utilization data for children, adolescents and the Status Aboriginal populations.

More than 500 copies of the 2009 Atlas were sent across the province to policy makers, advocacy groups and health care clinicians; some copies were also sent nationally to these same groups. In its debut week, the *Edmonton Journal*, *Calgary Herald*, *CTV Edmonton*, *Global TV Edmonton* and *Citytv Edmonton* all featured news stories about the Atlas. To obtain a copy of the 2009 Atlas, visit our website at [www.albertadiabetes.ca](http://www.albertadiabetes.ca)



### Health Care Costs for Adults by Health Zone

Across Alberta, the crude average\* health care costs for the three expenditure categories combined (physician visits, emergency department encounters and hospitalizations) was \$4,165 for the adult population with diabetes, compared to \$1,348 for the adult population without diabetes (Figure 1). When looking at the population with diabetes in each of the five health zones individually, the Calgary zone had the lowest average cost (\$3,577), which was about 14% lower than the province-wide value, while the North zone had the highest average cost (\$5,393), about 29% higher than the province-wide value (Figure 1). The crude average health care costs for the population with diabetes were 2.9 to 3.3 times higher than for the population without diabetes in each zone (Figure 1).

Hospital costs were the largest expenditure category for the population with diabetes in all health zones and in most of the health zones for adults without diabetes (with the Calgary zone being the exception) (Figure 2). In adults with diabetes, the highest hospital costs were in the North zone (71%) and the lowest were in the Calgary zone (62%). A similar pattern was observed in adults without diabetes, where the North zone had the highest hospital costs (56%) and the Calgary zone had the lowest (46%).

Among adults with diabetes, the costs associated with physician visits accounted for the second highest expenditure in all health zones (Figure 2). The urban zones of Edmonton and Calgary spent a larger percentage on physician costs for adults with and

Figure 1: Crude Average Health Care Costs for Adults (Ages >=20) by Zone, 2007

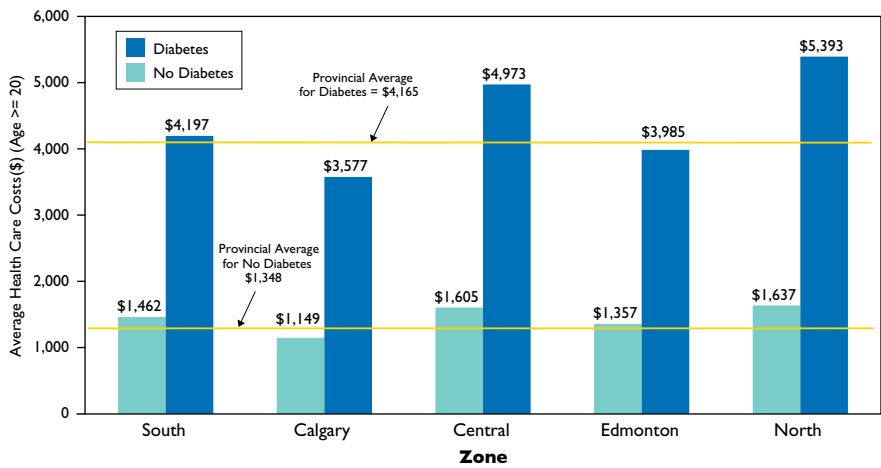
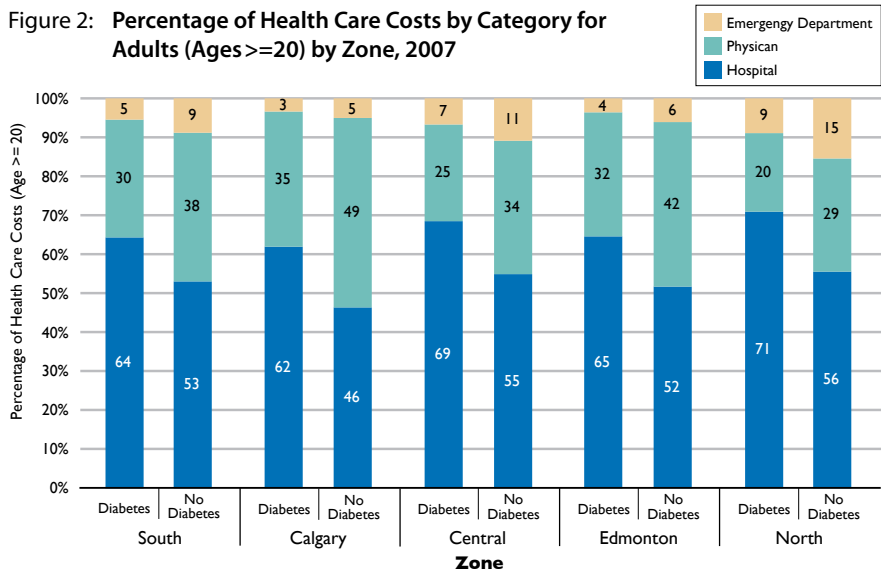


Figure 2: Percentage of Health Care Costs by Category for Adults (Ages >=20) by Zone, 2007



without diabetes compared to the non-metro North, South and Central zones (Figure 2). The highest physician costs were observed in adults without diabetes in the Calgary zone (49%), which also had physician costs as their largest expenditure category.

Overall, the percentage of the total health care costs that were spent on hospital visits were higher in adults with diabetes (ranging from 62-71% across the zones) compared to adults without diabetes (46-56%), whereas adults without diabetes spent a larger percentage of the total health care costs on physician visits (29-49%) compared to adults with diabetes (20-35%).

\* Crude average: The values shown have not been adjusted for underlying characteristics that may exist between two populations, such as: age (people with diabetes tend to be older than people without diabetes), or sex (males tend to have more diabetes than females).

Figure 3: Crude Average Health Care Costs for Children and Adolescents (Ages <20) by Zone, 2007

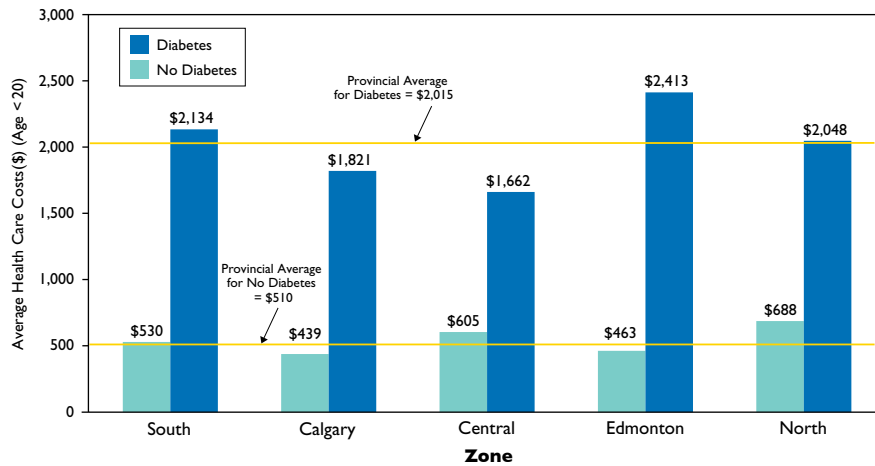
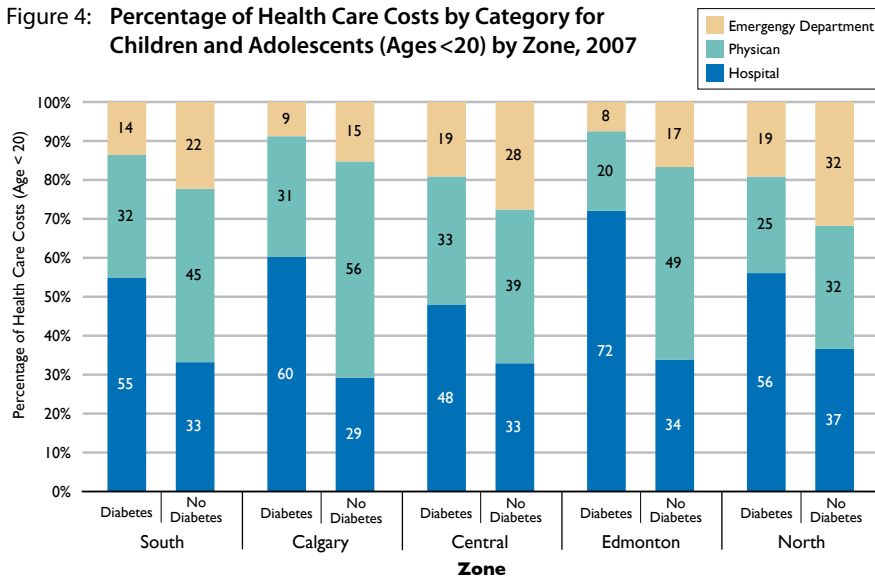


Figure 4: Percentage of Health Care Costs by Category for Children and Adolescents (Ages <20) by Zone, 2007



**Health Care Costs for Children and Adolescents by Health Zone**

The crude provincial average health care costs for the three expenditure categories combined (physician visits, emergency department encounters and hospitalizations) for children and adolescents with diabetes was \$2,015, compared to \$510 for children and adolescents without diabetes (Figure 3). Children and adolescents with diabetes in the Edmonton zone had the highest average cost (\$2,413), while the Central zone had the lowest average cost (\$1,662). The differences between the urban health zones were notable, where the average cost for the Edmonton zone was 20% above the provincial average at \$2,413, while the Calgary zone was 10% below the provincial average at \$1,821 (Figure 3). Considerable variation

was observed across zones in the excess cost for children and adolescents with diabetes relative to those without, ranging from 2.7 to 5.2 times higher in each zone.

It is also notable that differences exist within some zones with regard to the costs of care relative to the provincial averages. In the Edmonton zone, for example, the costs for diabetic children and adolescents were 20% higher than the provincial diabetes average whereas the costs for non-diabetic children and adolescents were 10% below their provincial average (Figure 3). In the Central zone, on the other hand, the costs for diabetic children and adolescents were 18% below the provincial diabetic average while the costs for non-diabetic children and adolescents were 19% above their provincial average.

Similar to the adult population, hospital costs were the largest expenditure category for children and adolescents with diabetes in all zones (Figure 4). The contribution of hospital costs to the total was higher in the Edmonton zone (72%) compared to the Calgary zone (60%), where the majority of the difference in the hospital costs appeared to be made up by a greater contribution to physician costs (31%) in the Calgary zone. Among those without diabetes, hospitalizations accounted for the largest contribution to costs in the North zone (37%) and the lowest contribution in the Calgary zone (29%).

Physician costs were the largest expenditure category for children and adolescents without diabetes in all zones except the North zone (Figure 4). Among children and adolescents without diabetes, the Calgary zone had the largest physician expenditure (56%) compared to the North zone which had the lowest (32%).

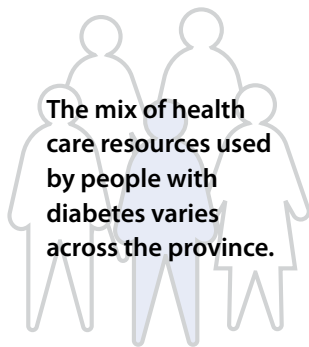
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The contribution of emergency department costs to the total health care costs was quite different between the two populations. Emergency department visits contributed to 9-19% of the total health care costs in children and adolescents with diabetes compared to 15-32% of those without diabetes.

Overall, the percentage of the total health care costs that were spent on hospital visits were higher in children and adolescents with diabetes (ranging from 48-72% across the zones) compared to those without diabetes (29-37%), whereas children and adolescents without diabetes spent a larger percentage of the total health care costs on physician visits (32-56%) compared to those with diabetes (20-33%).

**Summary**

We observed variation across Alberta’s five health zones in average costs for hospitalizations, emergency department encounters and physician visits combined for adults and for children and adolescents with diabetes. The relative contribution of each category to the overall health care costs also varied across the zones, suggesting that the pattern and mix of services used contributed to differences in total costs. It is important to note, however, that these numbers do not represent the total costs of care. We are unable to report on the costs of drug therapies or use of allied health care providers (nurses, dieticians, pharmacists, etc.) because no systematically collected data sources exist for these important health care resources.



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