

# Hospitalizations of Albertan youth

## Child and Youth Data Laboratory (CYDL)

### Report for *Experiences of Albertan Youth Project*

## Key findings

This report is an overview of 29,676 hospitalizations of 24,067 Albertan youth (12 to 24 years) in 2008/09. Type of service was determined from main service codes. Youth not registered with the Alberta Health Care Insurance Plan in 2008/09 were excluded.

The relationships between hospitalizations and age, gender, region of residence, socio-economic status, educational achievement and mental health status were considered. The cross-ministry service use of youth who were hospitalized was also studied.

- 3.1% of youth were hospitalized once and 0.6% had multiple hospitalizations. The most common services were pregnancy-related, surgery or procedures, and general medicine.
- Males and females had similar rates of hospitalization when pregnancy-related hospitalizations for females were excluded.
- Hospitalized youth tended to live in rural or mid-sized regions or in low socio-economic status areas, perform below educational expectations, or receive services for a mental health condition (youth with *schizophrenia/psychoses* were particularly likely to be hospitalized).
- Most hospitalizations for youth aged 17 and under were for a surgery or procedure or for general medicine. Hospitalizations for youth aged 18 and older or youth living in the lowest socio-economic status neighbourhoods were most often pregnancy-related. Youth performing below educational expectations were more likely to have pregnancy-related or psychiatric hospitalizations than youth doing better in school. Hospitalizations among youth with mental health conditions were more likely to be for *psychiatric* services and less likely for *surgery or general procedures* than hospitalizations among youth without mental health conditions.
- Hospitalization rates were highest for youth who received maltreatment-related intervention services, were charged with an offence, were involved in corrections, received Family Support for Children with Disabilities services, or received income support.
- Psychiatric hospitalizations were most common among hospitalizations for youth receiving intervention services or involved in justice or corrections.



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# Hospitalizations of Albertan youth

## Context

Canadian hospitalization rates are affected by the unique geographic characteristics of Canada. There is regional variation in availability of primary health care providers, such as family physicians, and access to quality primary care services lowers hospitalization rates, particularly for conditions that can be managed on an outpatient basis.<sup>1,2</sup> Hospitalization rates for chronic conditions are higher in rural as compared to urban areas.<sup>1</sup> Social factors also play a role in hospitalization rates; lower socio-economic status is associated with higher hospitalization rates, for example for mental illness and chronic health conditions.<sup>2</sup>

Canadian Institute for Health Information data show that injuries or poisoning, respiratory diseases, digestive system diseases, and mental disorders are common reasons for hospitalizations of both males and females.<sup>3</sup>

Hospitalizations due to injuries for youth under 20 years of age in 2005/06 in Canada were most likely among 15 to 19 year olds. The leading cause of injury hospitalizations for youth under 15 was unintentional falls, with motor vehicle collisions the leading cause for youth 15 to 19 years old.<sup>4</sup>

Childbirth is the most common reason for females of childbearing age to be hospitalized.<sup>5</sup> While fewer than 5% of births in Canada are to females younger than 20 years old,<sup>6</sup> females who give birth at a young age have a higher likelihood of experiencing negative outcomes as young mothers, including low socio-economic status, lower educational achievement, lower employment levels and lower likelihood of having a partner contributing to the household income.<sup>7</sup>

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## The project

The current project, **Experiences of Albertan Youth**, is focused on basic understanding of the experiences of Albertan youth within and across ministries, as they relate to key indicators (age, gender, socio-economic status, educational achievement, and mental health status). It is the first project in a planned series that will link and analyze administrative data on children and youth in Alberta to inform policy, programs, and research.

## List of reports for the project

*Socio-economic status of Albertan youth*  
*Educational experiences of Albertan youth*  
*Mental health status of Albertan youth*  
*Family Support for Children with Disabilities services received by Albertan youth*  
*Maltreatment-related investigations among Albertan youth*  
*Maltreatment-related intervention services received by Albertan youth*  
*Physician visits by Albertan youth*

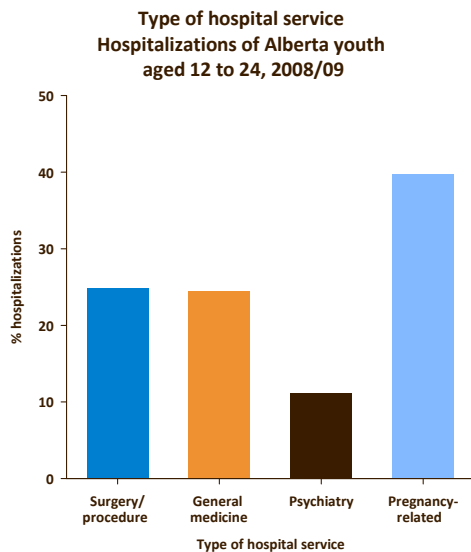
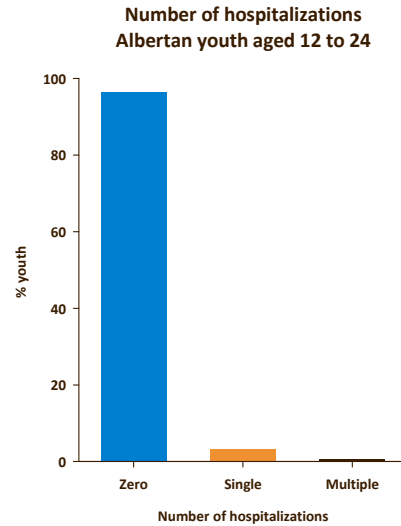
*Emergency room visits by Albertan youth*  
*Hospitalizations of Albertan youth*  
*Offence charges among Albertan youth*  
*Corrections involvement among Albertan youth*  
*Post-secondary students in Alberta*  
*Income support among Albertan youth*  
*Educational experiences of Albertan youth with income support activity*  
*Least advantaged and most advantaged Albertan youth*

# Hospitalizations of Albertan youth

## Number of hospitalizations (Tables 1 and 2)

This and the following analyses consider youth (aged 12 to 24 years, unless otherwise stated) who were registered with the Alberta Health Care Insurance Plan at any point in 2008/09.

- Among 655,758 who were registered, 4% had one or more hospitalizations.
- 3.1% of youth were hospitalized once and 0.6% had multiple hospitalizations.



## Type of hospital service (Table 3)

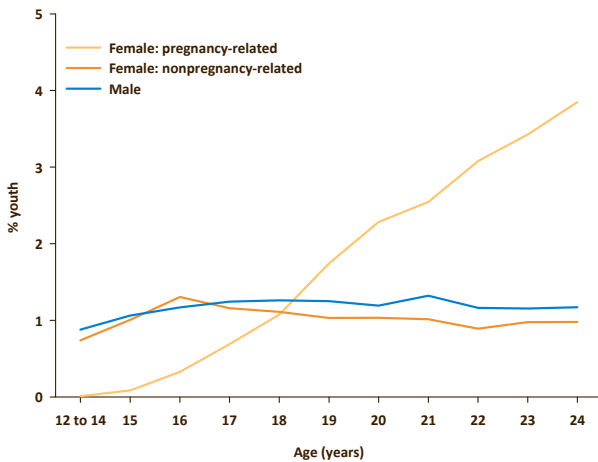
- Analyses of type of hospital service are based on all hospitalizations. See the table below for examples of type of hospital service and *Definitions and Notes* (p. 19) for a description of coding.
- There were a total of 29,676 hospitalizations for 24,067 youth.
- 40% of hospitalizations were for pregnancy-related services.
- 25% of hospitalizations were for surgery or procedures, 25% were for general medicine, and 11% were for psychiatry services.

### Type of hospital service, main service code examples

Category name	Examples
General medicine	Gastro-intestinal, respirology, allergy, etc.
Surgery/procedure	Orthopaedic surgery, urology, etc.
Psychiatry	Psychiatry or pediatric psychiatry
Pregnancy-related	Deliveries, antepartum obstetrics, or abortions

# Hospitalizations of Albertan youth

Hospitalization rate by age and gender  
Albertan youth aged 12 to 24



## Hospitalization rate by age and gender (Table 4)

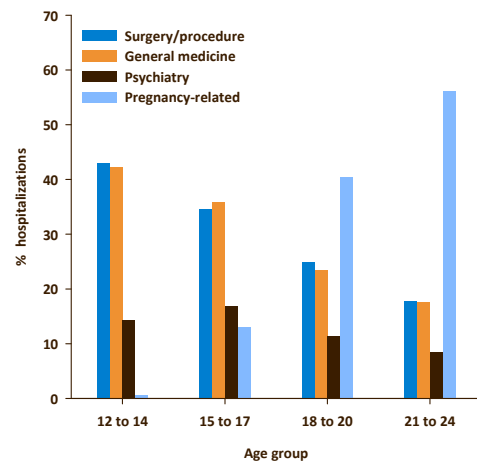
Pregnancy-related and non-pregnancy-related hospitalizations were analyzed separately for females in this and the following gender analyses.

- Female and male youth had similar rates of non-pregnancy-related hospitalizations, and little variation was observed across age.
- After age 18, females were substantially more likely to be hospitalized for pregnancy-related services, with the rate increasing with age.

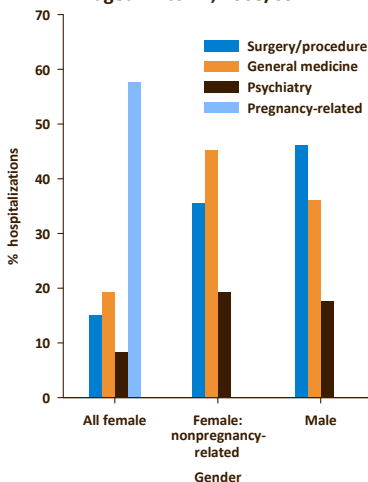
## Type of hospital service by age (Table 5)

- Most hospitalizations for youth aged 17 and under were for either a surgery or procedure or for general medicine.
- Hospitalizations for youth aged 18 and older were most often pregnancy-related. This reflects the fact that these youth are of reproductive age and the majority of births in Alberta occur in hospitals.

Type of hospital service by age  
Hospitalizations of Albertan youth  
aged 12 to 24, 2008/09



Type of hospital service by gender  
Hospitalizations of Albertan youth  
aged 12 to 24, 2008/09



## Type of hospital service by gender (Table 6)

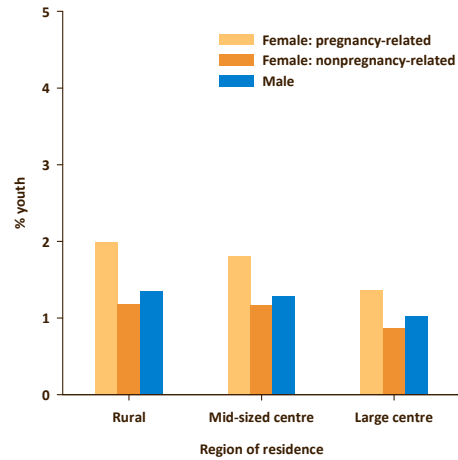
- Hospitalizations for female youth were most likely for pregnancy-related reasons (58% of hospitalizations).
- Once pregnancy-related hospitalizations were excluded, hospitalizations for females were most often for general medicine (45%) and hospitalizations for males were most often for surgery or procedure (46%).
- Psychiatry services comprised about 20% of hospitalizations for males and for females who did not receive pregnancy-related services.

# Hospitalizations of Albertan youth

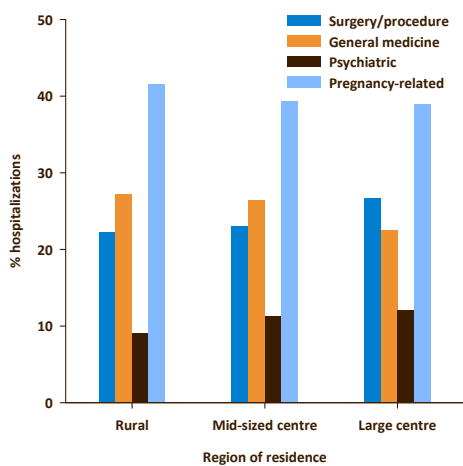
## Hospitalization rate by region of residence and gender (Table 7)

- Male and female youth living in rural regions or mid-sized centres were more likely to be hospitalized than youth living in large centres (Edmonton or Calgary).
- There were slightly more females with pregnancy-related hospitalizations in rural regions (2.0%) than in mid-sized centres (1.8%) or large (1.4%) centres.

Hospitalization rate by region of residence and gender  
Albertan youth aged 12 to 24



Type of hospital service by region of residence  
Hospitalizations of Albertan youth aged 12 to 24, 2008/09



## Type of hospital service by region of residence (Table 8)

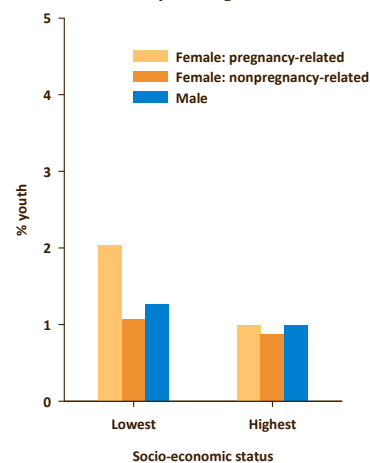
- The majority of hospitalizations in all regions of residence were for pregnancy-related services.
- Surgery or procedures made up a greater percentage of hospitalizations in large centres than in smaller centres, while general medicine hospitalizations were more common in rural and mid-sized centres than in large centres.
- Hospitalizations for psychiatric services were least common in rural regions.

## Hospitalization rate by socio-economic status and gender (Table 9)

Socio-economic status captures the social and material environments in which youth live. Only the highest and lowest socio-economic status groups are shown in this and the following analysis. See *Definitions and Notes* (p. 18).

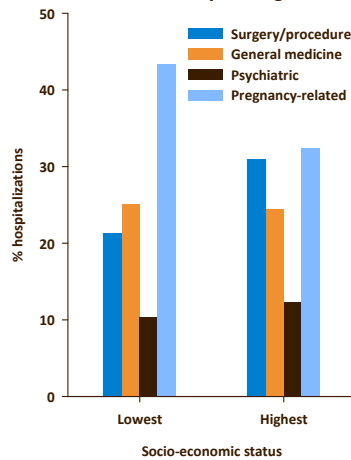
- Youth living in the lowest socio-economic status areas were more likely to be hospitalized than youth living in the highest socio-economic status areas.
- This effect was most pronounced for female youth with pregnancy-related hospitalizations (2.0% in the lowest socio-economic status areas compared to 1.0% in the highest socio-economic status areas).

Hospitalization rate by socio-economic status and gender  
Albertan youth aged 12 to 24



# Hospitalizations of Albertan youth

Type of hospital service by socio-economic status  
Hospitalizations of Albertan youth aged 12 to 24, 2008/09



## Type of hospital service by socio-economic status (Table 10)

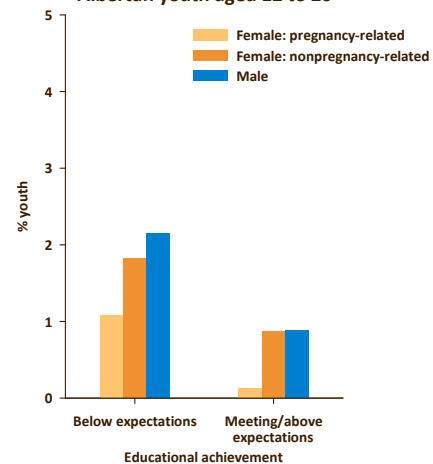
- 43% of hospitalizations for youth in the lowest socio-economic status neighbourhoods were for pregnancy-related services.
- Among hospitalizations of youth living in the highest socio-economic status neighbourhoods, pregnancy-related (32%) and surgery or procedure services (31%) were equally common .

## Hospitalization rate by educational achievement and gender (Table 11)

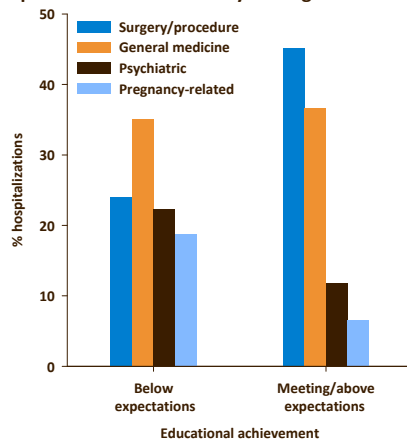
Youth (12 to 20 years) who were enrolled in the K-12 education system in 2008/09 are included in this and the following analysis. See *Definitions and Notes* (p.18).

- Youth who performed below educational expectations were more likely to be hospitalized than youth meeting or above educational expectations.
- The female pregnancy-related hospitalization rate was 10 times higher for youth performing below expectations (1.1%) compared to youth meeting or achieving above expectations (0.1%) but still represented only 1% of youth.

Hospitalization rate by educational achievement and gender  
Albertan youth aged 12 to 20



Type of hospital service by educational achievement  
Hospitalizations of Albertan youth aged 12 to 20, 2008/09



## Type of hospital service by educational achievement (Table 12)

- Surgery or procedure was the most common type of hospital service for hospitalizations of youth meeting or above expectations (45% of hospitalizations) while general medicine hospitalizations were more common for youth performing below expectations (35%).
- Pregnancy-related and psychiatric hospitalizations were more common among hospitalizations of youth performing below expectations (19%, 22% respectively) than among hospitalizations of youth meeting or achieving above expectations (7%, 12% respectively).

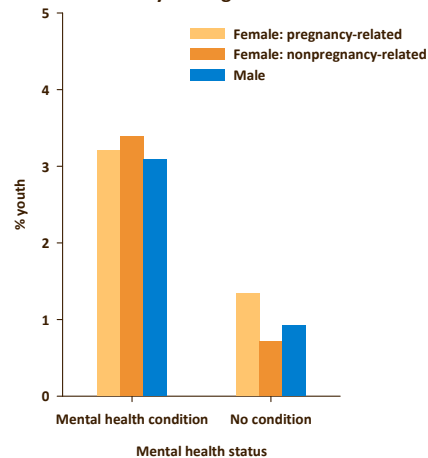
# Hospitalizations of Albertan youth

## Hospitalization rate by mental health status and gender (Table 13)

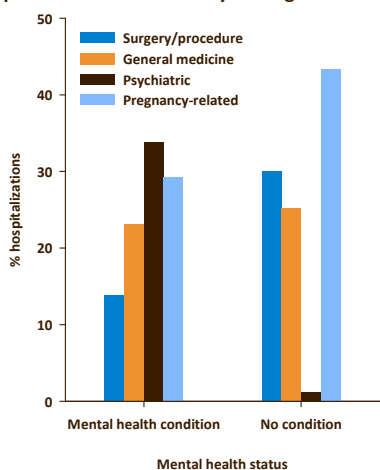
Mental health status refers to presence or absence of a mental health condition. Mental health conditions are defined as receipt of services related to mental health conditions; that is, receipt of services is used here as a proxy for confirmed presence of a mental health condition. See *Definitions and Notes* (p. 19).

- Youth with a mental health condition were more likely to be hospitalized than youth with no mental health condition, which may be partially due to how mental health was defined in this report (see *Definitions and Notes* p. 19).

Hospitalization rate by mental health status and gender  
Albertan youth aged 12 to 24



Type of hospital service by mental health status  
Hospitalizations of Albertan youth aged 12 to 24, 2008/09



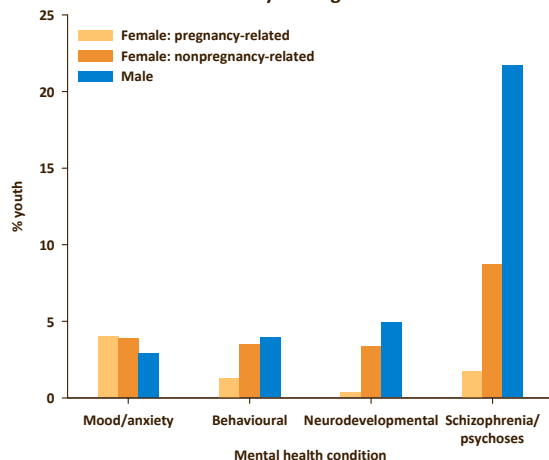
## Type of hospital service by mental health status (Table 14)

- Hospitalizations for youth with no mental health condition were most likely to be pregnancy-related (43% of hospitalizations).
- Psychiatric hospitalizations were much more common among hospitalizations for youth with a mental health condition (34%) than among hospitalizations of youth with no mental health condition (1%). This may be partially because the definition of mental health status included psychiatric hospitalizations. See *Definitions and Notes* p. 19.

## Hospitalization rate by mental health condition and gender (Table 13)

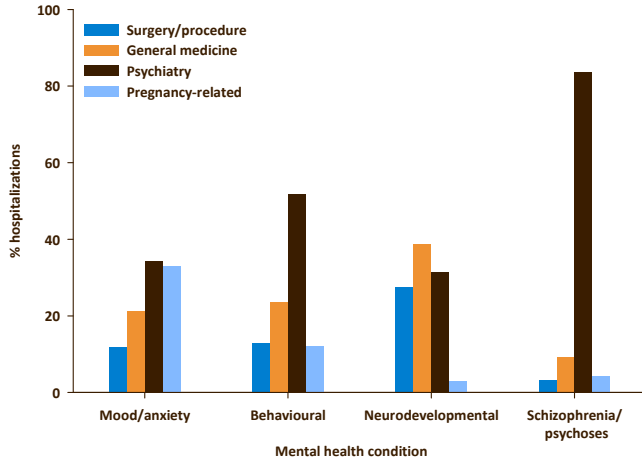
- Male youth with *schizophrenia/ psychoses* disorders were far more likely to be hospitalized than youth with other mental health conditions.
- The hospitalization rate for pregnancy-related services was higher for females with a *mood/ anxiety* disorder than for females with other mental health conditions.

Hospitalization rate by mental health condition and gender  
Albertan youth aged 12 to 24



# Hospitalizations of Albertan youth

Type of hospital service by mental health condition  
Hospitalizations of Albertan youth aged 12 to 24, 2008/09

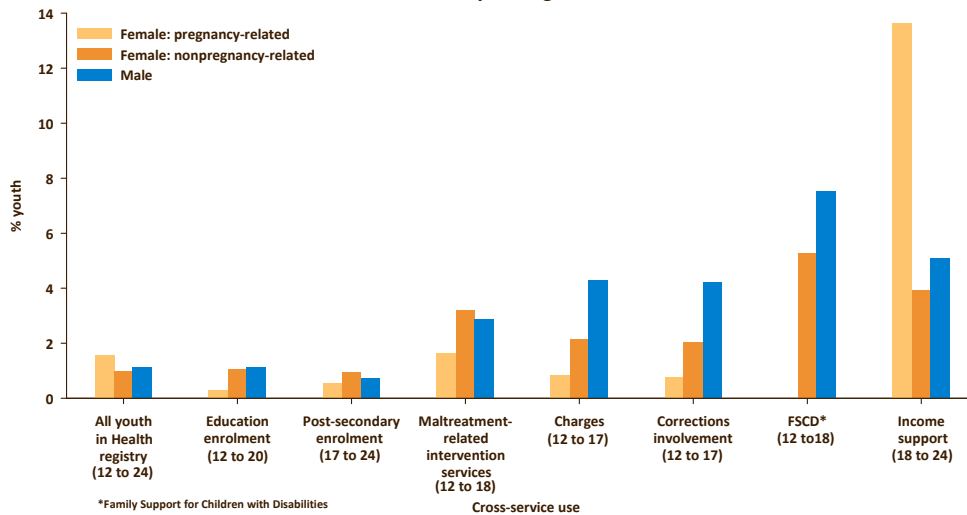


Type of hospital service by mental health condition (Table 14)

- Hospitalizations for youth with *schizophrenia/psychoses* or *behavioural* conditions were most likely to be for psychiatry services.
- Hospitalizations for youth with *mood/anxiety* conditions were equally likely to be for psychiatry and pregnancy-related services.
- Hospitalizations for youth with *neurodevelopmental* conditions were most commonly for general medicine services.

## Hospitalization rate by cross-service use and gender (Table 15)

Hospitalization rate by cross-service use and gender  
Albertan youth aged 12 to 24



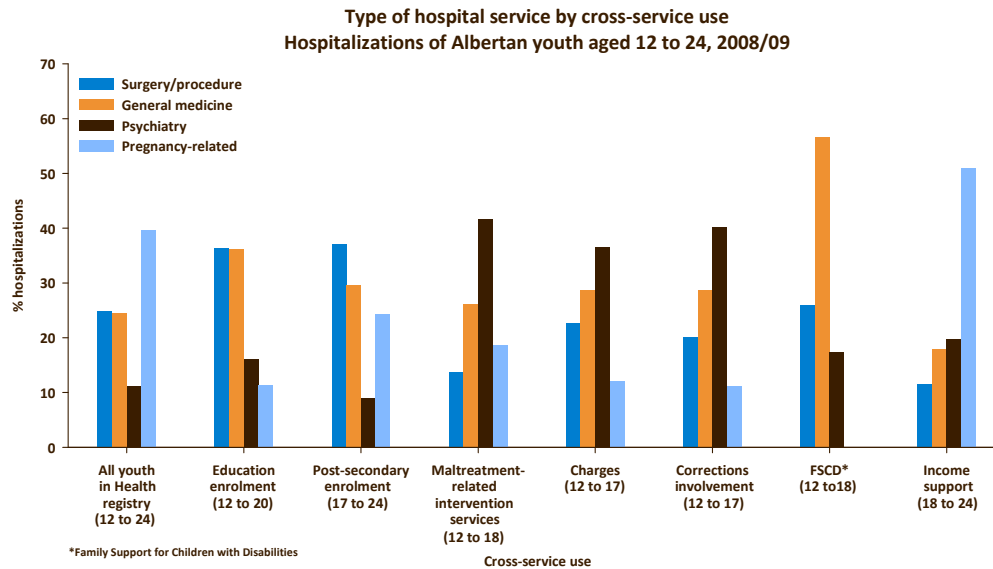
Youth were considered in this and the following analysis if they were registered with the Alberta Health Care Insurance Plan (AHCIP; see *Definitions and Notes*, p. 19). The effects should be interpreted with caution; they cannot be generalized to youth not registered with AHCIP.

- Low rates of hospitalizations were observed for youth registered with the AHCIP, enrolled in the K-12 education system or enrolled in a post-secondary institution.
- Higher hospitalization rates were observed for youth who received maltreatment-related intervention services, youth who received offence charges, youth with corrections involvement, and youth who received support from Family Support for Children with Disabilities (FSCD), among males and females with nonpregnancy-related hospitalizations.
- Youth receiving income support had elevated rates of hospitalizations, especially among females with pregnancy-related hospitalizations.



# Hospitalizations of Albertan youth

## Type of hospital service by cross-service use (Table 16)



- Hospitalizations for all youth registered with the AHCIIP were mostly for pregnancy-related services.
- Hospitalizations for youth enrolled in the K- 12 education system were equally likely to be for a surgery/procedure or for general medicine whereas surgery/procedure was the most common hospital service among hospitalizations for youth enrolled in a post-secondary institution.
- Psychiatric hospital services were more common in hospitalizations of youth who received maltreatment-related intervention services (41% of hospitalizations), youth with offence charges (37%), and youth with corrections involvement (40%), compared to hospitalizations of all youth registered with the Alberta Health Care Insurance Plan (11%).
- Hospitalizations of youth receiving services from FSCD were most likely to be for general medicine services (57%).
- Pregnancy-related services were most common among hospitalizations of youth receiving income support.

# Hospitalizations of Albertan youth

## Tables

**Table 1. Number and percent of youth by age group and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Age group (years)					
		12 to 17	12 to 18	12 to 20	17 to 24	18 to 24	12 to 24
Number of youth	Females: pregnancy-related	550	1,085	3,151	10,014	9,675	10,225
	Females: nonpregnancy-related	2,713	3,265	4,324	4,286	3,717	6,430
	Males	2,913	3,540	4,793	5,110	4,499	7,412
	Any hospitalization	6,176	7,890	12,268	19,410	17,891	24,067
	No hospitalizations	278,955	326,987	425,244	400,349	352,736	631,691
	Total	285,131	334,877	437,512	419,759	370,627	655,758
Percent of youth	Females: pregnancy-related	0.2	0.3	0.7	2.4	2.6	1.6
	Females: nonpregnancy-related	1.0	1.0	1.0	1.0	1.0	1.0
	Males	1.0	1.1	1.1	1.2	1.2	1.1
	Any hospitalization	2.2	2.4	2.8	4.6	4.8	3.7
	No hospitalizations	97.8	97.6	97.2	95.4	95.2	96.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0

\*During the linkage process, gender values submitted for a given individual were sometimes discrepant. One gender had to be assigned to each individual. This very occasionally resulted in male gender being assigned to an individual who had pregnancy-related hospitalizations. The few cases to which this applied were included in the male hospitalizations in the analyses in this report.

**Table 2. Number and percent of youth by number of hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Number of hospitalizations	
Number of youth	Single	20,353
	Multiple	3,714
	Any hospitalization	24,067
	No hospitalizations	631,691
	Total	655,758
Percent of youth	Single	3.1
	Multiple	0.6
	Any hospitalization	3.7
	No hospitalizations	96.3
	Total	100.0

# Hospitalizations of Albertan youth

## Tables (continued)

**Table 3. Number and percentage of hospitalizations by age group and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Age group (years)					
		12 to 17	12 to 18	12 to 20	17 to 24	18 to 24	12 to 24
Number of hospitalizations	Surgery/procedure	2,917	3,552	4,792	5,052	4,436	7,353
	General medicine	2,958	3,522	4,728	4,930	4,302	7,260
	Psychiatry	1,225	1,503	2,079	2,339	2,073	3,298
	Pregnancy-related	648	1,274	3,693	11,515	11,117	11,765
	Total hospitalizations	7,748	9,851	15,292	23,836	21,928	29,676
Percent of hospitalizations	Surgery/procedure	37.6	36.1	31.3	21.2	20.2	24.8
	General medicine	38.2	35.8	30.9	20.7	19.6	24.5
	Psychiatry	15.8	15.3	13.6	9.8	9.5	11.1
	Pregnancy-related	8.4	12.9	24.1	48.3	50.7	39.6
	Total hospitalizations	100.0	100.0	100.0	100.0	100.0	100.0

**Table 4. Number and percent of youth by age, gender, and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Age (years)*											Total
		12 to 14	15	16	17	18	19	20	21	22	23	24	
Number of youth	Females: pregnancy-related	13	40	158	339	535	898	1,168	1,316	1,655	1,905	2,198	10,225
	Females: nonpregnancy-related	1,036	477	631	569	552	531	528	525	479	543	559	6,430
	Males	1,232	504	566	611	627	644	609	683	625	642	669	7,412
	Any hospitalization	2,281	1,021	1,355	1,519	1,714	2,073	2,305	2,524	2,759	3,090	3,426	24,067
	No hospitalizations	137,888	46,414	47,040	47,613	48,032	49,412	48,845	49,197	51,004	52,540	53,706	631,691
	Total	140,169	47,435	48,395	49,132	49,746	51,485	51,150	51,721	53,763	55,630	57,132	655,758
Percent of youth	Females: pregnancy-related	0.0	0.1	0.3	0.7	1.1	1.7	2.3	2.5	3.1	3.4	3.8	1.6
	Females: nonpregnancy-related	0.7	1.0	1.3	1.2	1.1	1.0	1.0	1.0	0.9	1.0	1.0	1.0
	Males	0.9	1.1	1.2	1.2	1.3	1.3	1.2	1.3	1.2	1.2	1.2	1.1
	Any hospitalization	1.6	2.2	2.8	3.1	3.4	4.0	4.5	4.9	5.1	5.6	6.0	3.7
	No hospitalizations	98.4	97.8	97.2	96.9	96.6	96.0	95.5	95.1	94.9	94.4	94.0	96.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Due to the low number of pregnancy-related hospitalizations in youth under age 14, ages 12 to 14 were combined.

# Hospitalizations of Albertan youth

## Tables (continued)

**Table 5. Number and percentage of hospitalizations by age group and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Age group (years)				
		12 to 14	15 to 17	18 to 20	21 to 24	Total
Number of hospitalizations	Surgery/procedure	1,223	1,694	1,875	2,561	7,353
	General medicine	1,202	1,756	1,770	2,532	7,260
	Psychiatry	404	821	854	1,219	3,298
	Pregnancy-related	15	633	3,045	8,072	11,765
	Total hospitalizations	2,844	4,904	7,544	14,384	29,676
Percent of hospitalizations	Surgery/procedure	43.0	34.5	24.9	17.8	24.8
	General medicine	42.3	35.8	23.5	17.6	24.5
	Psychiatry	14.2	16.7	11.3	8.5	11.1
	Pregnancy-related	0.5	12.9	40.4	56.1	39.6
	Total hospitalizations	100.0	100.0	100.0	100.0	100.0

**Table 6. Number and percentage of hospitalizations by gender and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Hospitalizations			
		Female	Female: pregnancy-related excluded	Male	Total
Number of hospitalizations	Surgery/procedure	3,061	3,061	4,292	7,353
	General medicine	3,901	3,901	3,359	7,260
	Psychiatry	1,665	1,665	1,633	3,298
	Pregnancy-related*	11,719	0	–	11,765
	Total hospitalizations	20,346	8,627	9,330	29,676
Percent of hospitalizations	Surgery/procedure	15.0	35.5	46.0	24.8
	General medicine	19.2	45.2	36.0	24.5
	Psychiatry	8.2	19.3	17.5	11.1
	Pregnancy-related*	57.6	0.0	–	39.6
	Total hospitalizations	100.0	100.0	100.0	100.0

\*During the linkage process, gender values submitted for a given individual were sometimes discrepant. One gender had to be assigned to each individual. This very occasionally resulted in male gender being assigned to an individual who had pregnancy-related hospitalizations. The few cases to which this applied were included in the male hospitalizations in the analyses in this report, but they are not reported as “pregnancy-related males” in this table.

# Hospitalizations of Albertan youth

## Tables (continued)

**Table 7. Number and percent of youth by region of residence, gender, and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Region of residence			
		Rural	Mid-sized centre	Large centre	Total
Number of youth	Females: pregnancy-related	2,771	1,832	5,622	10,225
	Females: nonpregnancy-related	1,651	1,188	3,590	6,429
	Males	1,882	1,302	4,228	7,412
	Any hospitalization	6,304	4,322	13,440	24,066
	No hospitalizations	133,686	97,525	400,367	631,578
	Total	139,990	101,847	413,807	655,644
Percent of youth	Females: pregnancy-related	2.0	1.8	1.4	1.6
	Females: nonpregnancy-related	1.2	1.2	0.9	1.0
	Males	1.3	1.3	1.0	1.1
	Any hospitalization	4.5	4.2	3.2	3.7
	No hospitalizations	95.5	95.8	96.8	96.3
	Total	100.0	100.0	100.0	100.0

**Table 8. Number and percentage of hospitalizations by region of residence and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Region of residence			
		Rural	Mid-sized centre	Large centre	Total
Number of hospitalizations	Surgery/procedure	1,776	1,221	4,356	7,353
	General medicine	2,171	1,401	3,687	7,259
	Psychiatry	723	599	1,976	3,298
	Pregnancy-related	3,312	2,083	6,370	11,765
	Total hospitalizations	7,982	5,304	16,389	29,675
Percent of hospitalizations	Surgery/procedure	22.3	23.0	26.6	24.8
	General medicine	27.2	26.4	22.5	24.5
	Psychiatry	9.1	11.3	12.1	11.1
	Pregnancy-related	41.5	39.3	38.9	39.6
	Total hospitalizations	100.0	100.0	100.0	100.0

## Hospitalizations of Albertan youth

### Tables (continued)

**Table 9. Number and percent of youth by socio-economic status (SES), gender, and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Socio-economic status					Total
		Lowest SES	Low middle	Middle	High middle	Highest SES	
Number of youth	Females: pregnancy-related	3,046	2,039	2,053	1,436	1,277	9,851
	Females: nonpregnancy-related	1,605	1,022	1,407	1,090	1,132	6,256
	Males	1,896	1,201	1,618	1,207	1,283	7,205
	Any hospitalization	6,547	4,262	5,078	3,733	3,692	23,312
	No hospitalizations	143,306	96,154	142,714	110,071	125,273	617,518
	Total	149,853	100,416	147,792	113,804	128,965	640,830
Percent of youth	Females: pregnancy-related	2.0	2.0	1.4	1.3	1.0	1.5
	Females: nonpregnancy-related	1.1	1.0	1.0	1.0	0.9	1.0
	Males	1.3	1.2	1.1	1.1	1.0	1.1
	Any hospitalization	4.4	4.2	3.4	3.3	2.9	3.6
	No hospitalizations	95.6	95.8	96.6	96.7	97.1	96.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0

**Table 10. Number and percentage of hospitalizations by socio-economic status (SES) and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Socio-economic status					Total
		Lowest SES	Low middle	Middle	High middle	Highest SES	
Number of hospitalizations	Surgery/procedure	1,728	1,150	1,610	1,265	1,402	7,155
	General medicine	2,044	1,225	1,548	1,131	1,104	7,052
	Psychiatry	845	555	726	531	557	3,214
	Pregnancy-related	3,525	2,368	2,312	1,651	1,470	11,326
	Total hospitalizations	8,142	5,298	6,196	4,578	4,533	28,747
Percent of hospitalizations	Surgery/procedure	21.2	21.7	26.0	27.6	30.9	24.9
	General medicine	25.1	23.1	25.0	24.7	24.4	24.5
	Psychiatry	10.4	10.5	11.7	11.6	12.3	11.2
	Pregnancy-related	43.3	44.7	37.3	36.1	32.4	39.4
	Total hospitalizations	100.0	100.0	100.0	100.0	100.0	100.0

# Hospitalizations of Albertan youth

## Tables (continued)

**Table 11. Number and percent of youth by educational achievement, gender, and hospitalizations, Albertan youth aged 12 to 20 years, 2008/09**

	Hospitalizations	Educational achievement		
		Below expectations	Meeting/above expectations	Total
Number of youth	Females: pregnancy-related	483	246	729
	Females: nonpregnancy-related	816	1,722	2,538
	Males	959	1,734	2,693
	Any hospitalization	2,258	3,702	5,960
	No hospitalizations	42,348	192,097	234,445
	Total	44,606	195,799	240,405
Percent of youth	Females: pregnancy-related	1.1	0.1	0.3
	Females: nonpregnancy-related	1.8	0.9	1.1
	Males	2.1	0.9	1.1
	Any hospitalization	5.1	1.9	2.5
	No hospitalizations	94.9	98.1	97.5
	Total	100.0	100.0	100.0

**Table 12. Number and percentage of hospitalizations by educational achievement and type of hospital service, Albertan youth aged 12 to 20 years, 2008/09**

	Type of hospital service	Educational achievement		
		Below expectation	Meeting/above expectations	Total
Number of hospitalizations	Surgery/procedure	726	1,996	2,722
	General medicine	1,062	1,619	2,681
	Psychiatry	676	519	1,195
	Pregnancy-related	569	286	855
	Total hospitalizations	3,033	4,420	7,453
Percent of hospitalizations	Surgery/procedure	23.9	45.2	36.5
	General medicine	35.0	36.6	36.0
	Psychiatry	22.3	11.7	16.0
	Pregnancy-related	18.8	6.5	11.5
	Total hospitalizations	100.0	100.0	100.0

# Hospitalizations of Albertan youth

## Tables (continued)

**Table 13. Number and percent of youth by mental health condition, gender, and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Mental health conditions*						
		Mood/ anxiety	Behavioural	Neuro developmental	Schizophrenia/ psychoses	Any condition	No condition	Total
Number of youth	Females: pregnancy-related	1,994	248	14	40	2,147	7,528	9,675
	Females: nonpregnancy-related	1,939	675	140	199	2,271	3,988	6,259
	Males	1,451	766	205	497	2,068	5,135	7,203
	Any hospitalization	5,384	1,689	359	736	6,486	16,651	23,137
	No hospitalizations	44,545	17,737	3,811	1,555	60,306	540,509	600,815
	Total	49,929	19,426	4,170	2,291	66,792	557,160	623,952
Percent of youth	Females: pregnancy-related	4.0	1.3	0.3	1.7	3.2	1.4	1.6
	Females: nonpregnancy-related	3.9	3.5	3.4	8.7	3.4	0.7	1.0
	Males	2.9	3.9	4.9	21.7	3.1	0.9	1.2
	Any hospitalization	10.8	8.7	8.6	32.1	9.7	3.0	3.7
	No hospitalizations	89.2	91.3	91.4	67.9	90.3	97.0	96.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Mental health condition categories are not mutually exclusive

**Table 14. Number and percentage of hospitalizations by mental health condition and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Mental health conditions*						
		Mood/ anxiety	Behavioural	Neuro developmental	Schizophrenia/ psychoses	Any condition	No condition	Total
Number of hospitalizations	Surgery/procedure	863	319	159	40	1,210	5,957	7,167
	General medicine	1,543	577	225	119	2,034	5,003	7,037
	Psychiatry	2,478	1,273	182	1,082	2,966	243	3,209
	Pregnancy-related	2,382	297	16	54	2,564	8,597	11,161
	Total hospitalizations	7,266	2,466	582	1,295	8,774	19,800	28,574
Percent of hospitalizations	Surgery/procedure	11.9	12.9	27.3	3.1	13.8	30.1	25.1
	General medicine	21.2	23.4	38.7	9.2	23.2	25.3	24.6
	Psychiatry	34.1	51.6	31.3	83.6	33.8	1.2	11.2
	Pregnancy-related	32.8	12.0	2.7	4.2	29.2	43.4	39.1
	Total hospitalizations	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Mental health condition categories are not mutually exclusive



# Hospitalizations of Albertan youth

## Tables (continued)

**Table 15. Number and percent of youth by cross-service use, gender, and hospitalizations, Albertan youth aged 12 to 24 years, 2008/09**

	Hospitalizations	Cross-service use							
		All youth in Health registry (12 to 24)	Education enrolment (12 to 20)	Post-secondary enrolment (17 to 24)	Maltreatment intervention (12 to 18)	Charges (12 to 17)	Corrections involvement (12 to 17)	FSCD* (12 to 18)	Income support (18 to 24)
Number of youth	Females: pregnancy-related	10,225	740	474	110	44	34	—**	644
	Females: nonpregnancy-related	6,430	2,589	794	215	113	91	185	186
	Males	7,412	2,745	622	191	226	187	265	241
	Any hospitalization	24,067	6,074	1,890	516	383	312	450	1,071
	No hospitalizations	631,691	240,147	83,054	6,173	4,883	4,129	3,066	3,660
	Total	655,758	246,221	84,944	6,689	5,266	4,441	3,516	4,731
Percent of youth	Females: pregnancy-related	1.6	0.3	0.6	1.6	0.8	0.8	—**	13.6
	Females: nonpregnancy-related	1.0	1.1	0.9	3.2	2.1	2.0	5.3	3.9
	Males	1.1	1.1	0.7	2.9	4.3	4.2	7.5	5.1
	Any hospitalization	3.7	2.5	2.2	7.7	7.3	7.0	12.8	22.6
	No hospitalizations	96.3	97.5	97.8	92.3	92.7	93.0	87.2	77.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Family Support for Children with Disabilities

\*\*Too few youth in FSCD had pregnancy-related hospitalizations to report.

**Table 16. Number and percentage of hospitalizations by cross-service use and type of hospital service, Albertan youth aged 12 to 24 years, 2008/09**

	Type of hospital service	Cross-service use							
		All youth in Health registry (12 to 24)	Education enrolment (12 to 20)	Post-secondary enrolment (17 to 24)	Maltreatment intervention (12 to 18)	Charges (12 to 17)	Corrections involvement (12 to 17)	FSCD* (12 to 18)	Income support (18 to 24)
Number of hospitalizations	Surgery/procedure	7,353	2,758	831	94	106	77	233	172
	General medicine	7,260	2,740	665	179	134	110	508	267
	Psychiatry	3,298	1,228	202	285	171	154	155	293
	Pregnancy-related	11,765	866	543	128	56	43	—**	758
	Total hospitalizations	29,676	7,592	2,241	686	467	384	896	1,490
Percent of hospitalizations	Surgery/procedure	24.8	36.3	37.1	13.7	22.7	20.1	26.0	11.5
	General medicine	24.5	36.1	29.7	26.1	28.7	28.6	56.7	17.9
	Psychiatry	11.1	16.2	9.0	41.5	36.6	40.1	17.3	19.7
	Pregnancy-related	39.6	11.4	24.2	18.7	12.0	11.2	—**	50.9
	Total hospitalizations	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\*Family Support for Children with Disabilities

\*\*Too few youth in FSCD had pregnancy-related hospitalizations to report.

# Hospitalizations of Albertan youth

## Definitions and Notes

- The study population for this project consisted of all Albertan youth who were registered with the Alberta Health Care Insurance Plan in 2008/09 or who received selected services from one or more of the participating ministries in 2008/09. “All Albertan youth” refers to this study population.
- The study year was fiscal year 2008/09. With the exception of Education and Enterprise and Advanced Education data, all data were for services provided between April 1, 2008 and March 31, 2009, with age determined on March 31, 2009.
  - Data for Enterprise and Advanced Education were for services provided between September 1, 2008 and June 30, 2009, with age determined on March 31, 2009.
  - Data for Education were for services provided to youth who were 12 to 19 years old on September 30, 2008. As a result, youth turning 12 between October 1, 2008 and March 31, 2009 *were not* included in the Education data but were included in other ministries’ data. This resulted in the number of 12 year olds in the Education data being lower (approximately 50% lower) than that of 13 to 17 year olds.
  - Furthermore, although Education only provides services to youth who are under 20, the provision of services is defined by age at September 30. Youth who turned 20 between October 1, 2008 and March 31, 2009 *were* included in the Education data, resulting in the inclusion of 20 year olds in some analyses of Education data.
- **Cross-ministry analyses included only youth that were linked across the relevant ministries.** This means that not all youth in the project were represented in every analysis. As well, only youth with a value for a given indicator were included in analyses involving that indicator (i.e., **missing values** were excluded).
- Age, gender, and postal code (translated into Statistics Canada dissemination areas) were provided for each individual by each participating ministry. In the case of discrepancies between ministries, the most common value for an indicator was chosen. In the event of two or more most common values, the value for the indicator was chosen randomly from the most common values.
- Dissemination areas of residence were used by CYDL to determine **region of residence**. Urban areas included large centres with urban core populations greater than 100,000 (i.e., Edmonton and Calgary metropolitan areas) and mid-sized centres with urban cores greater than 10,000; all other areas were categorized as rural.
- **Socio-economic status (SES)** captures the social and material environments in which youth live. A youth was assigned a socio-economic status via an index based on the Statistics Canada dissemination area in which he or she resided<sup>8</sup>. Six indicators were included in the index: percent without a high school diploma, the employment ratio, average income, percent of single families, percent of persons living alone, and percent of persons separated, divorced, or widowed. Socio-economic status values fell into five quintiles. In this report, “lowest socio-economic status” refers to the lowest quintile of socio-economic status, while “highest” refers to the highest quintile.
- **Educational achievement** was computed by Alberta Education using age, grade, school type, special education codes, provincial achievement test scores, home education status, number of high school credits earned, number of higher level courses taken, average grade in higher level courses, possession of an Alberta Education certificate or diploma, and Alexander Rutherford scholarship eligibility. Educational achievement was categorized as *above, meeting, or below expectations* for a student’s age and grade. An educational achievement rating was not available for 12 to 14 year old youth without scores on provincial achievement tests, for youth in ‘other’ schools (accredited post-secondary institutions offering high school courses for credit to adults; most youth in these schools were between 18 and 20 years), and for home-schooled high school youth with no credits.

# Hospitalizations of Albertan youth

## Definitions and Notes (continued)

- **Mental health status** was defined by the presence or absence of mental health diagnosis codes in Health’s databases (Inpatient—Discharge Abstract Database, Ambulatory Care, and Practitioner Payments), or in the Family Support for Children with Disabilities Information System. Only youth who were registered with the Alberta Health Care Insurance Plan or the full fiscal year were included in the mental health analyses. **Mental health service use is a proxy for presence of a mental health condition:** Some youth with mental health conditions may not have accessed mental health services in Alberta during the year, and some mental health service use may have occurred for youth who did not in fact have mental health conditions.
  - **Mental health conditions** were grouped based on The Johns Hopkins ACG® Case-Mix System (version 8.2<sup>9</sup>). Mental health conditions were *mood/anxiety* (anxiety, depression, bipolar disorder, etc.), *behavioural* (attention-deficit disorder, regulatory disorder, mental or behavioural problems due to substance use, etc.), *neurodevelopmental* (autism, fetal alcohol spectrum disorder, cerebral palsy, etc.), or *schizophrenia/psychoses* (schizophrenia, psychosis, delusional disorder, etc.). Conditions were not mutually exclusive; a youth could have a diagnosis in more than one category.
- **Hospitalizations** refer to admissions to hospital for assessment or treatment. **Hospital service type** was defined by the main patient service code (the patient service that contributes to the longest portion of a patient's stay; see the Canadian Institute for Health Information’s DAD Abstracting Manual<sup>10</sup> for codes). Categories of services were labeled *general medicine* (patient service codes 01 to 29, 55, 56, 58, 60 to 63, 66 to 76, 82, 91, 96, 99), *surgery/procedure* (patient service codes 30 to 49, 81, 87), *psychiatry* (patient service codes 64, 65), or *pregnancy-related* (patient service codes 51 to 54, 59).
- New and returning Alberta residents, if they are eligible, must register for **Alberta Health Care Insurance Plan** coverage to receive insured health services. Youth in the “**health registry**” refers to all youth who are insured in Alberta. This includes any eligible youth who is a permanent resident of Alberta, living at least 183 days per year in the province. Members of the Canadian Armed Forces, Royal Canadian Mounted Police and federal penitentiary inmates are not eligible (they receive coverage from the federal government), but dependents of these non-eligible residents, who reside in Alberta, are eligible.
- Participation in **education** refers to enrolment in the kindergarten to grade 12 education system in Alberta. No data were available for students who attended schools on First Nations reserves or in Lloydminster.
- Participation in **post-secondary** education refers to enrolment in a post-secondary institution in Alberta. Youth involved in apprenticeship programs were not included.
- **Maltreatment-related interventions** occur when the safety or well-being of a youth is threatened.
- Youth with **offence charges** include those charged with criminal offences or administrative offences related to criminal offences (e.g., failure to appear in court, breach of probation, etc.). **Number of offences** in the study year was available, but individual incidents were not available. This means that youth charged with multiple offences may have had multiple charges in a single incident, or they may have been charged in multiple incidents.

## Hospitalizations of Albertan youth

### Definitions and Notes (continued)

- Youth with **corrections involvement** have appeared before the Court or a Justice of the Peace for an offence charge and have been remanded in custody or placed under pre-trial supervision in the community awaiting further court dates, or have been found guilty and sentenced to a community disposition (i.e. Fine, Probation, Community Service Work, Deferred Custody) and/or custody (in which the sentence is served in a young offender facility).
- **Family Support for Children with Disabilities (FSCD)** is a ministry of Human Services program that provides a range of supports and services to families that strengthen their ability to support and care for their child with a disability based on their needs.
- **Income support** refers to financial benefits provided to individuals and couples who cannot meet their basic needs.

# Hospitalizations of Albertan youth

## Data sources

Ministry	Database	Use in this report
Enterprise and Advanced Education	Learner Enrolment Reporting System (LERS)	Post-secondary education enrolment data
Education	Corporate Data Warehouse (CDW)	Primary and secondary education achievement data
Health	Inpatient – Discharge Abstract Database (DAD)	Hospitalization data
Health	Ambulatory Care (ACCS)	Emergency room visit data
Health	Practitioner Payments (SESE)	Physician visit data
Health	Alberta Health Care Insurance Plan Population Registry (AHCIP registry)	Population registry
Human Services	Child Youth Information Module (CYIM)	Maltreatment and intervention data
Human Services	Family Support for Children with Disabilities Information System (FSCDIS)	Family Supports for Children with Disabilities data
Human Services	Central Client Directory (CCD)	Income support data
Justice and Solicitor General	Justice Online Information Network (JOIN)	Offence data
Justice and Solicitor General	Alberta Community Offender Management System (ACOM)	Corrections data (community)
Justice and Solicitor General	Correctional Offender Management Information System (CoMIS)	Corrections data (custody)

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## Hospitalizations of Albertan youth

# Hospitalizations of Albertan youth

## The Child and Youth Data Laboratory

The **Child and Youth Data Laboratory** (CYDL) links and analyzes administrative data from child- and youth-serving ministries in the Government of Alberta. The ministries participate in research design and provide data elements that contribute to answering research questions.

The CYDL's research provides groundbreaking opportunities to understand relationships between critical factors in the lives of children and youth in Alberta. The research results can be used to inform policy and program development and evaluation, both within and across ministries, and to inspire further research.

The CYDL is managed by the **Alberta Centre for Child, Family and Community Research** (ACCFCR). The Centre has evolved over its eight year history as a public-sector, innovative resource for evidence. The Centre develops, supports and integrates research across sectors and disciplines to provide a strong, evidence-based foundation for identifying and promoting effective public policy and service delivery to improve the well-being of children, families, and communities in Alberta, Canada, and internationally.

## Our partners

This project was carried out on behalf of six ministries of the Government of Alberta. Each ministry collaborated extensively with the CYDL on this project, and their dedication to the project is gratefully acknowledged:

Enterprise and Advanced Education  
Education  
Health  
Human Services  
Aboriginal Relations  
Justice and Solicitor General

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# Hospitalizations of Albertan youth



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