Cost of a Standard Hospital Stay

Behind the Scenes?

BC Financial Healthcare Professionals Society

Canadian Institute for Health Information

Road Map

Context – Provincial Spending

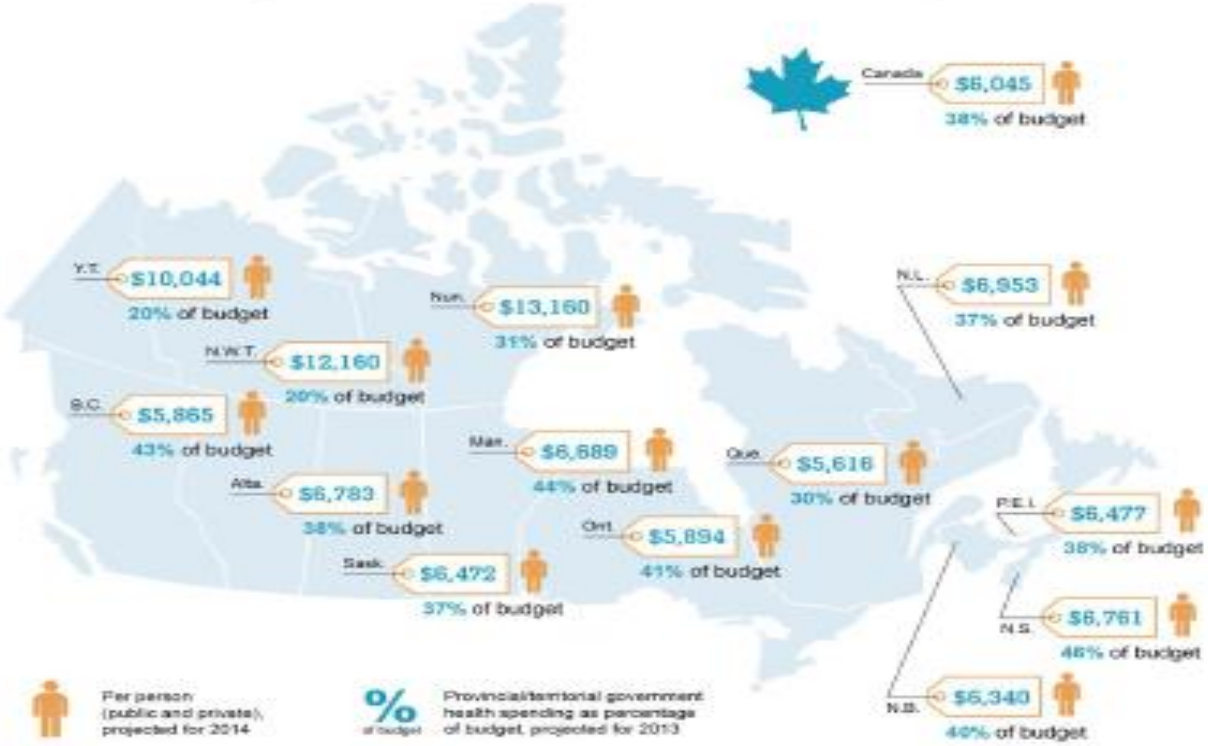
CSHS in British Columbia

CSHS – what is it, data processing and methodology

Some CIHI tools that use CSHS

Breaking down CSHS

How do the provinces and territories compare?



Source
Canadian Institute for Health Information, *National Health Expenditure Trends, 1975 to 2014*.

CIHI

Total Health Care Spending by Province

Table 6: Total Health Expenditure per Capita and Share, Selected Use of Funds, by Province/Territory and Canada, 2014[f]

	Hospitals		Drugs		Physicians		Other Professionals		Other Institutions	
	Exp. per Capita	Exp. as Percentage of Provincial Total	Exp. per Capita	Exp. as Percentage of Provincial Total	Exp. per Capita	Exp. as Percentage of Provincial Total	Exp. per Capita	Exp. as Percentage of Provincial Total	Exp. per Capita	Exp. as Percentage of Provincial Total
	$	%	$	%	$	%	$	%	$	%
N.L.	2,496	35.9	951	13.7	888	12.8	471	6.8	882	12.7
P.E.I.	2,034	31.4	934	14.4	751	11.6	526	8.1	908	14.0
N.S.	2,058	30.4	1,098	16.2	878	13.0	711	10.5	868	12.8
N.B.	2,103	33.2	1,145	18.1	791	12.5	549	8.7	725	11.4
Que.	1,487	26.5	1,065	19.0	844	15.0	509	9.1	786	14.0
Ont.	1,665	28.3	982	16.7	989	16.8	608	10.3	577	9.8
Man.	2,010	30.0	862	12.9	948	14.2	613	9.2	777	11.6
Sask.	1,945	30.1	856	13.2	926	14.3	569	8.8	795	12.3
Alta.	2,386	35.2	882	13.0	1,060	15.6	740	10.9	506	7.5
B.C.	1,801	30.7	740	12.6	868	14.8	717	12.2	381	6.5
Y.T.	2,791	27.8	735	7.3	930	9.3	759	7.6	1,956	19.5
N.W.T.	4,471	36.8	702	5.8	1,177	9.7	654	5.4	922	7.6
Nun.	4,688	35.6	644	4.9	1,498	11.4	579	4.4	1,269	9.6
Canada	**1,787**	**29.6**	**955**	**15.8**	**936**	**15.5**	**613**	**10.1**	**625**	**10.3**

Note
f: Forecast.
Source
National Health Expenditure Database, Canadian Institute for Health Information.

CIHI

Hospital Expenditures

CSHS

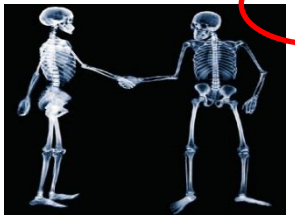
Inpatient

Ambulatory Care

IP

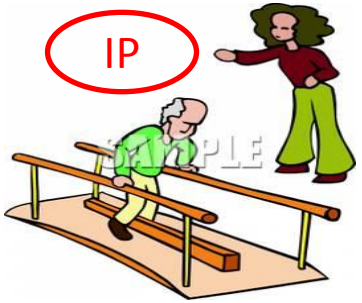
Continuing Care

Diagnostics and Therapeutics



IP

IP



IP

CIHI

Cost Of A Standard Hospital Stay (CSHS)

Total Acute Inpatient Cost**

Number of Acute Inpatient

Weighted Cases***

** Includes actual inpatient costs from Canadian hospitals that report to the Canadian MIS Database.

*** Relates to RIWs assigned to acute inpatients in the Discharge Abstract Database

Cost Of A Standard Hospital Stay (CSHS)

- Efficiency Indicator
- Specific to each facility
- Comparable across facilities, provinces, patient characteristics
- Average cost of an average patient

- The average cost to treat a case with an RIW of 1.000
- Can be used to translate RIW into average cost estimates
- Benchmarking
- ?Price?

From CSHS to a cost estimate

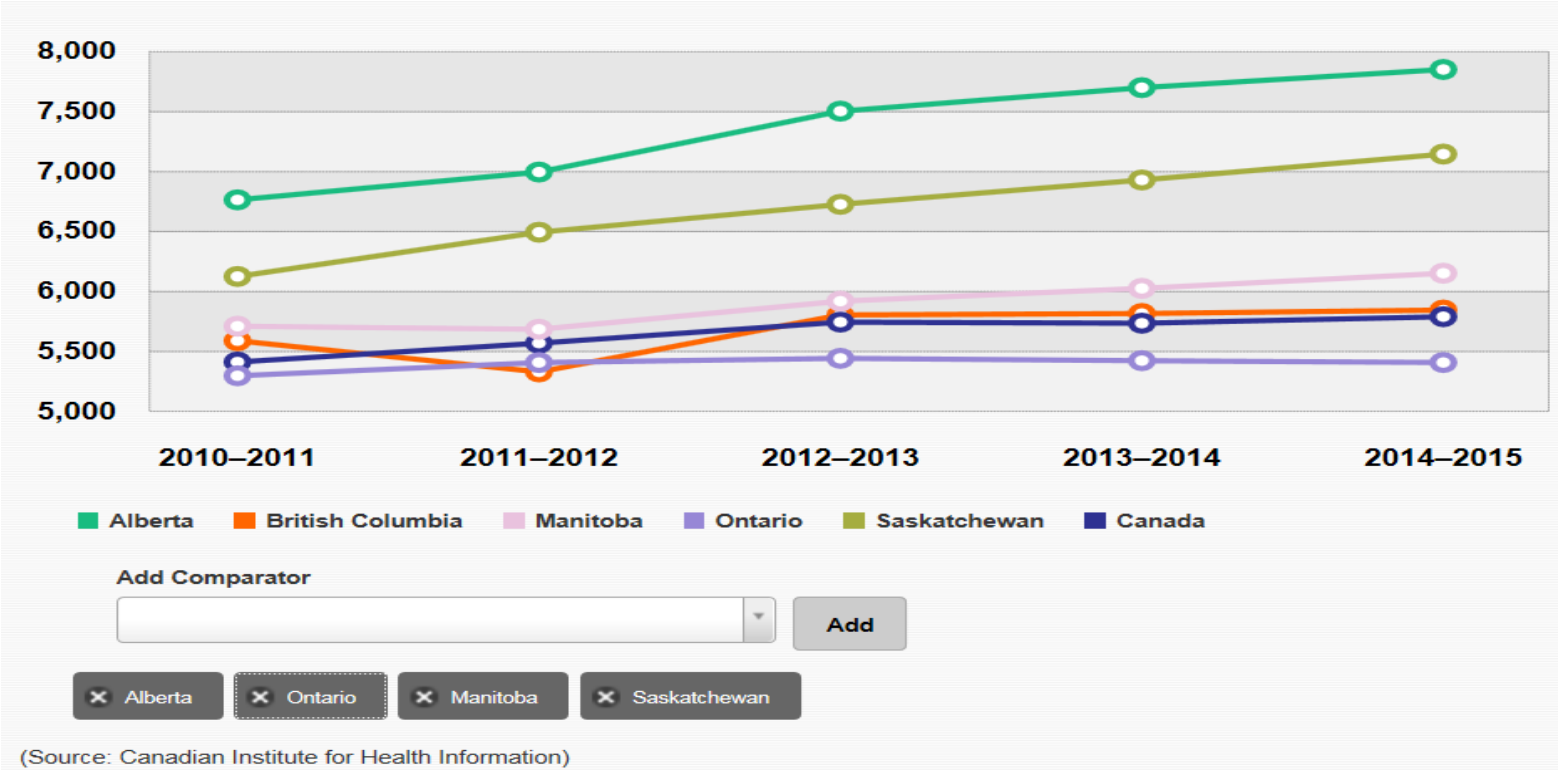
$$CSHS_i * RIW_j =$$

Hospital cost **estimate** of treating a specific patient care episode

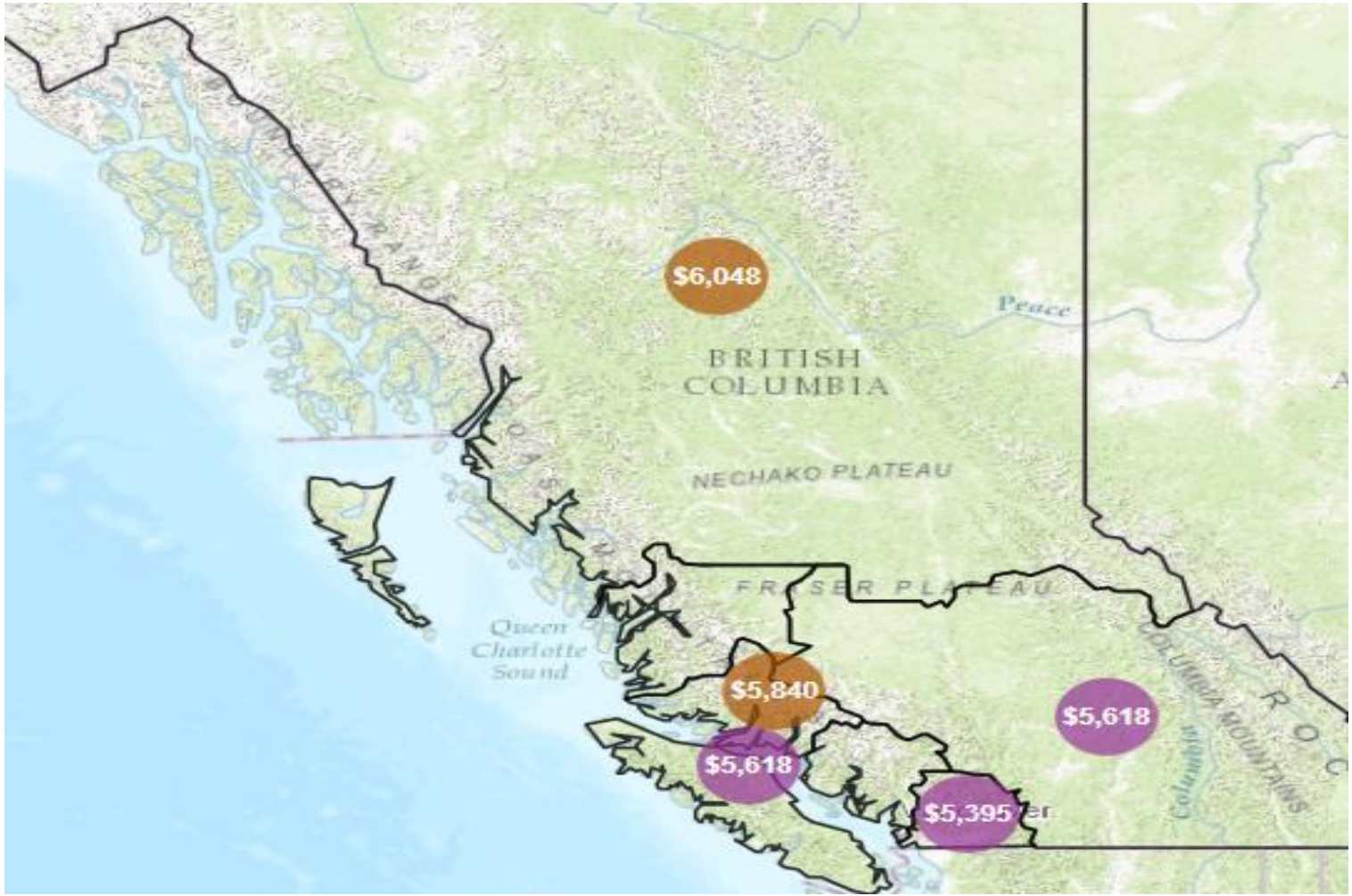
i = national, provincial, regional or hospital level

j = patient care episode(s) in DAD

BC CSHS – near the average of Canada

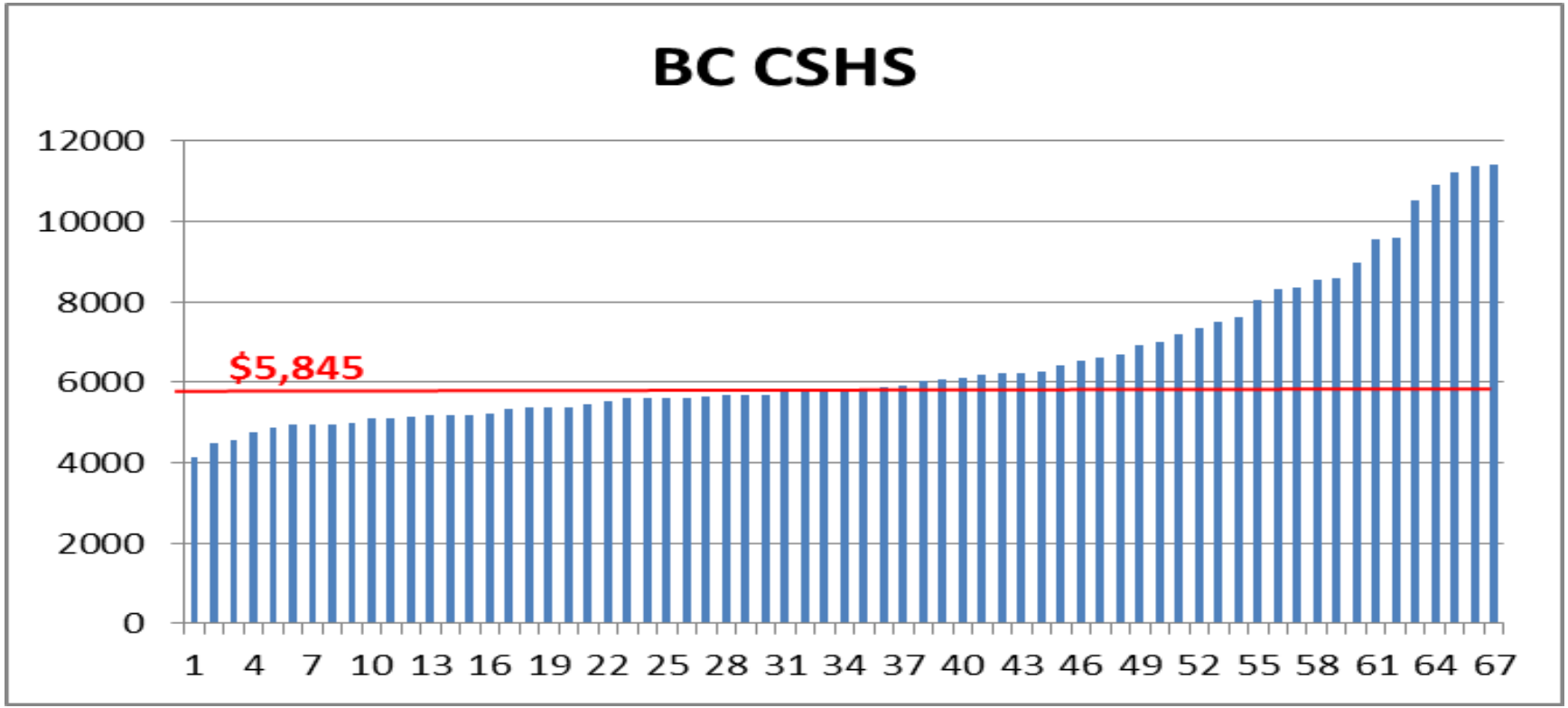


CIHI


$6,048
BRITISH
COLUMBIA
Peace
NECHAKO PLATEAU
FRASER PLATEAU
Queen
Charlotte
Sound
$5,840
$5,618
$5,618
$5,395
Columbia MOUNTAINS
Columbia

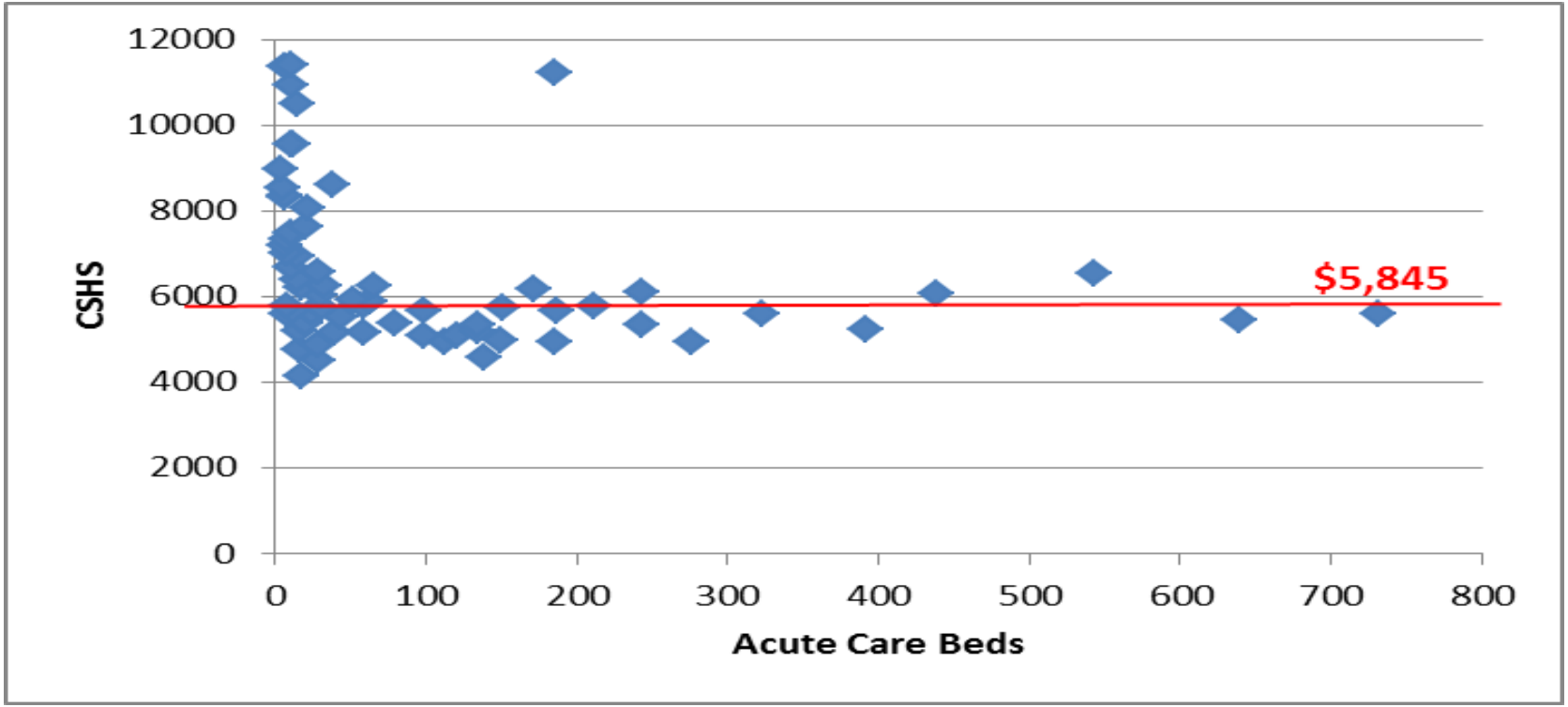
CIHI

Variation in CSHS between facilities 2014-15



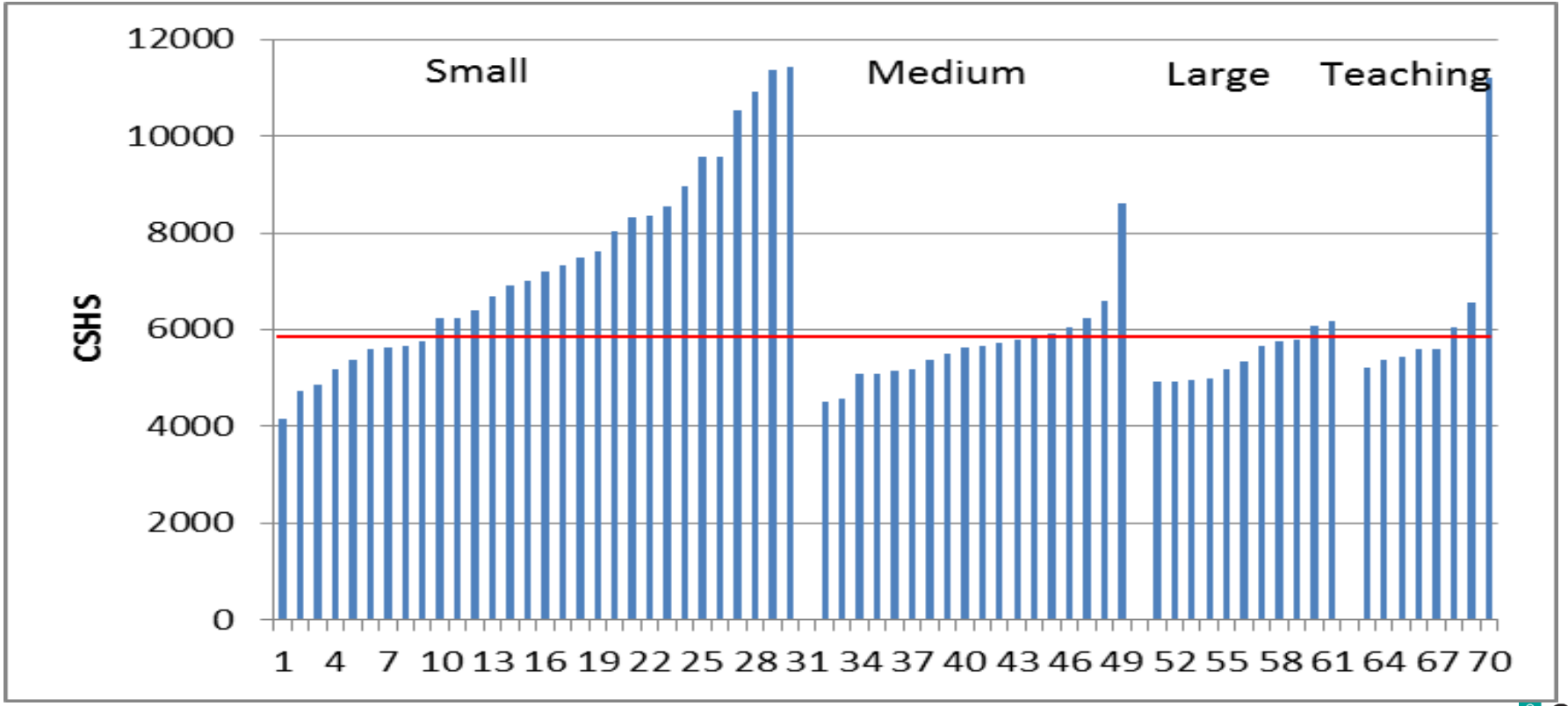
CIHI

Variation of CSHS by bed size 2014-15



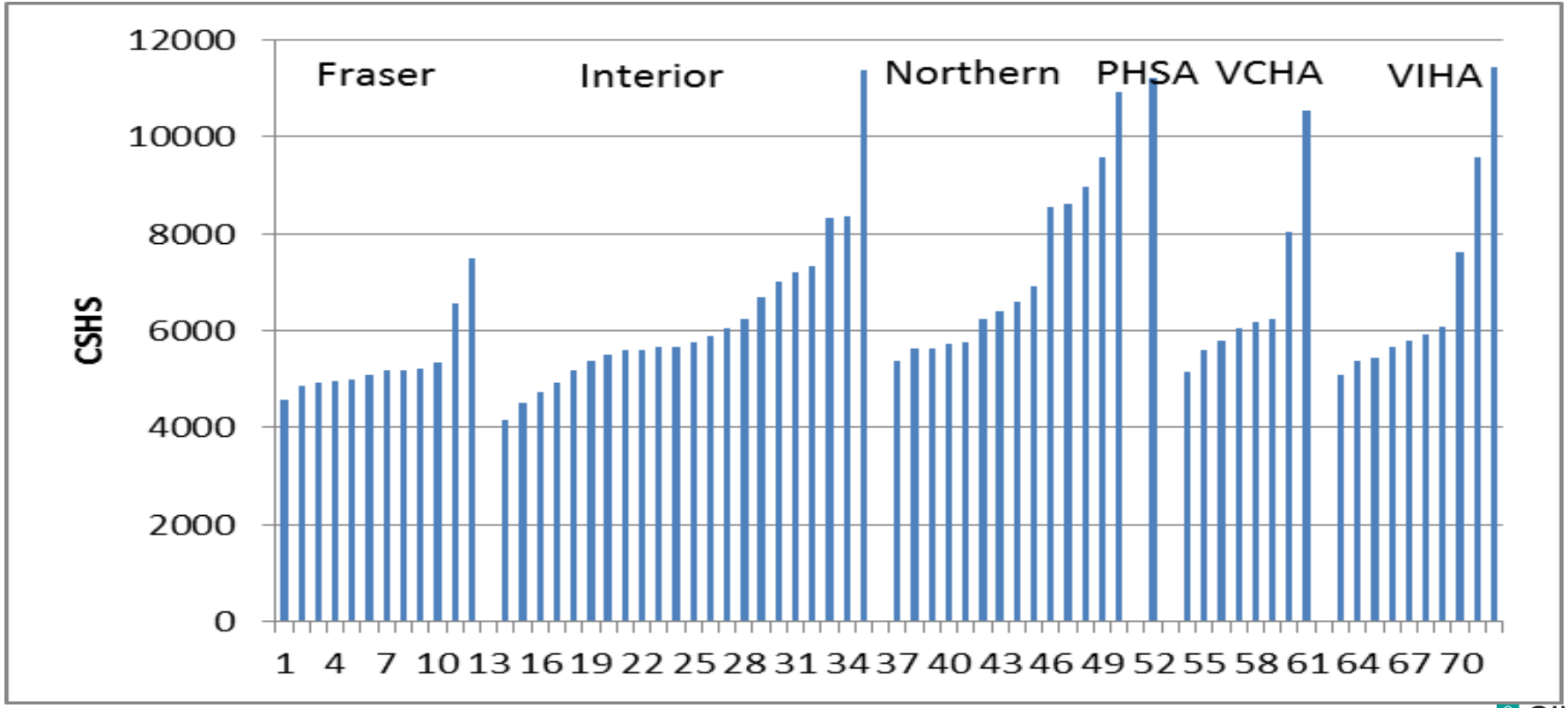
CIHI

CSHS by peer group 2014-15



CIHI

BC CSHS by facility by health region 2014-15



CIHI

CIHI

Sources of data for the CSHS

- **CMDB (Numerator)**
  - Full acute inpatient cost is calculated for each hospital
  - Includes acute inpatient costs regardless of which functional centre they are reported in
  - Is a full cost (direct cost + indirect cost)

- **DAD (denominator)**
  - Each patient in the DAD is ‘grouped’ and assigned an RIW
  - The RIWs are aggregated by hospital (“weighted cases”)

Cost Of A Standard Hospital Stay (CSHS)

CIHI

Financial Data Sources

- **Financial**
  - The Canadian MIS Database (CMDB)
  - Financial and statistical data reported by health service organizations in Canada
  - No patient-level data
  - The MIS Standards
  - A set of national standards for the collection and reporting of financial and statistical data related to day-to-day operations of health service organizations across the continuum

CIHI

Analytical Data Cut

Regional Health Authority

Clearing Accounts

MIS Standards:

Regional Data to be allocated
Clearing Accounts to be cleared

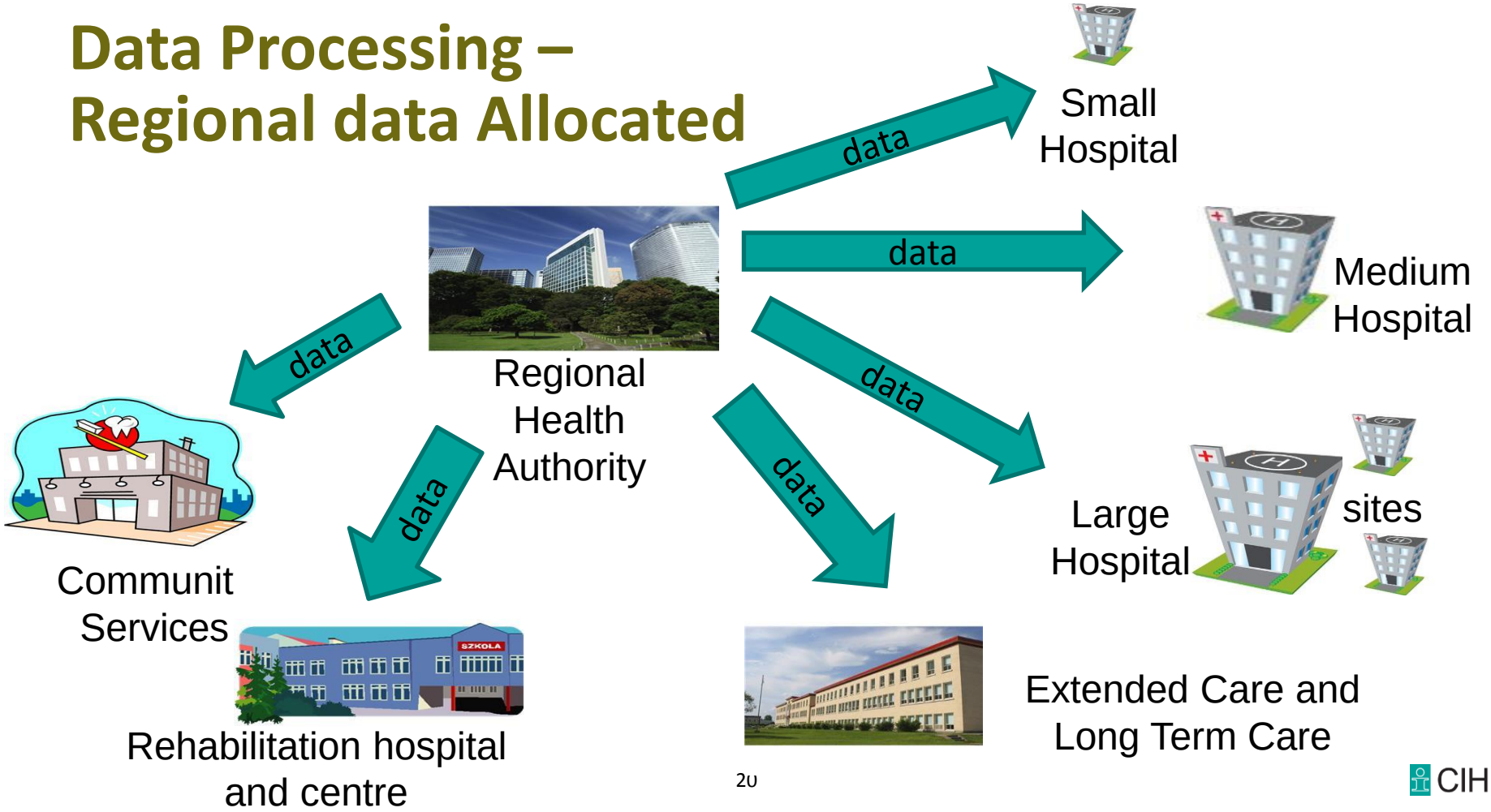
If not, then Data Processing:

Purpose:

- Comparable data across provinces
- Used for most analysis

CIHI

Data Processing – Regional data Allocated



CIHI

Distribution of Regional Expenses – non-clinical

Regional Entity

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Data – sector code zzz

Reporting facility 1

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Reporting facility 2

Data – sector code 001

Data – sector code xxx

Data – sector code zzz

Distribution of Regional Expenses – non-clinical

Regional Entity

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Data – sector code zzz

Reporting facility 1

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Reporting facility 2

Data – sector code 001

Data – sector code xxx

Data – sector code zzz

Distribution of Regional Expenses – non-clinical

Regional Entity

Reporting facility 1

Reporting facility 2

Data – sector code 001

Data – sector code xxx → Data – sector code xxx

Data – sector code xxx

Data – sector code yyy

Data – sector code yyy

Data – sector code zzz

Data – sector code zzz

CIHI

Distribution of Regional Expenses – non-clinical

Regional Entity

Reporting facility 1

Reporting facility 2

Data – sector code 001

Data – sector code xxx

Data – sector code xxx

Data – sector code yyy

Data – sector code yyy

Data – sector code zzz

Data – sector code zzz

CIHI

Distribution of Regional Expenses – non-clinical

Regional Entity

Data – sector code 001

Data – sector code zzz

Reporting facility 1

Data – sector code xxx

Data – sector code yyy

Reporting facility 2

Data – sector code xxx

Data – sector code zzz

Distribution of Regional Expenses – non-clinical

Regional Entity

Reporting facility 1

Reporting facility 2

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Data – sector code xxx

Data – sector code zzz

Distribution of Regional Expenses – non-clinical

Regional Entity

Reporting facility 1

Data – sector code 001

Data – sector code xxx

Data – sector code yyy

Reporting facility 2

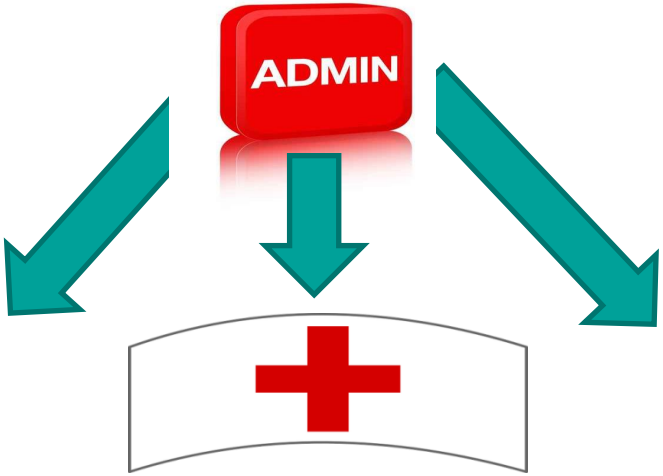
Data – sector code 001

Data – sector code xxx

Data – sector code zzz

Data Processing – Clearing accounts cleared

Nursing Administration

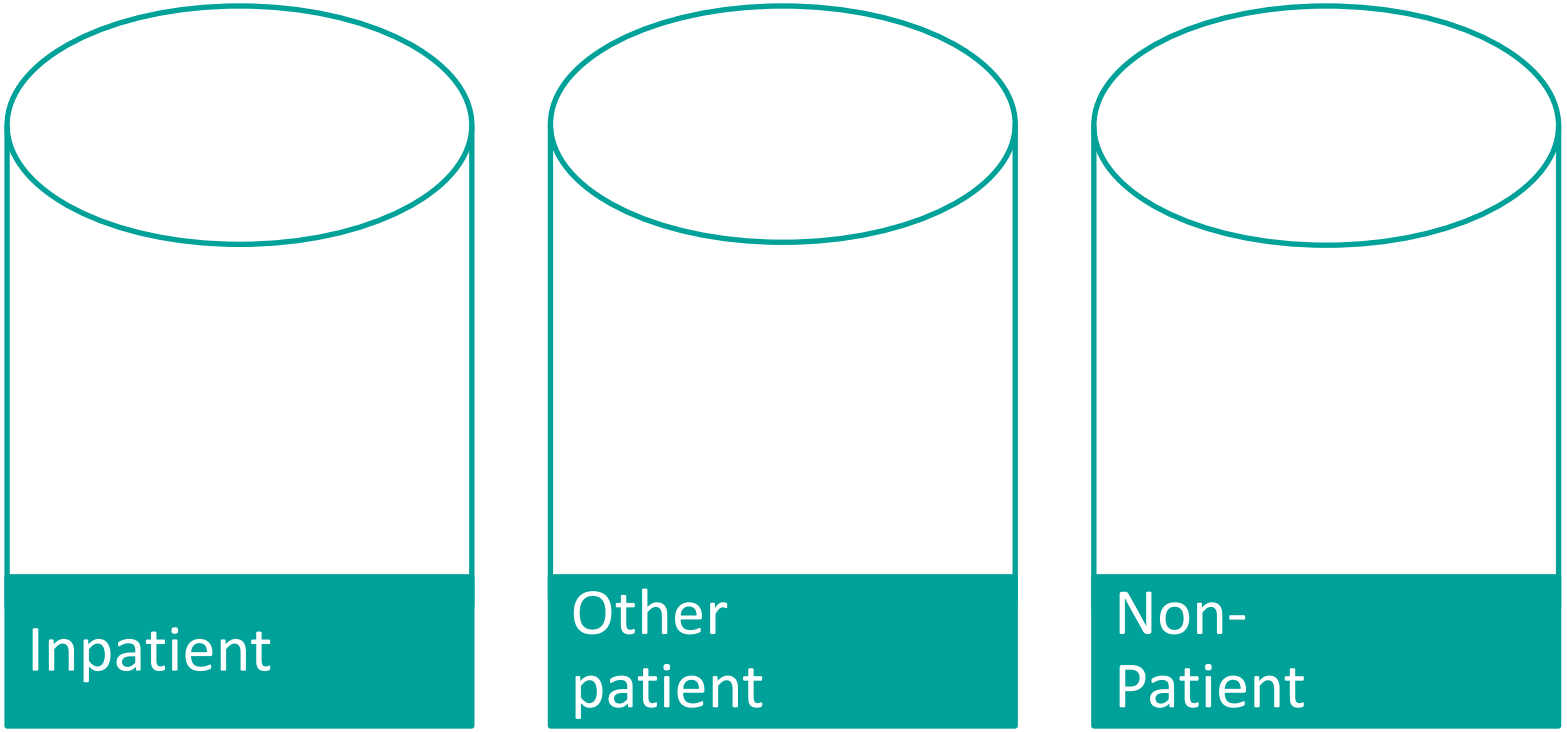


NURSING UNIT A **NURSING UNIT B** **NURSING UNIT C**

CIHI

CSHS methodology

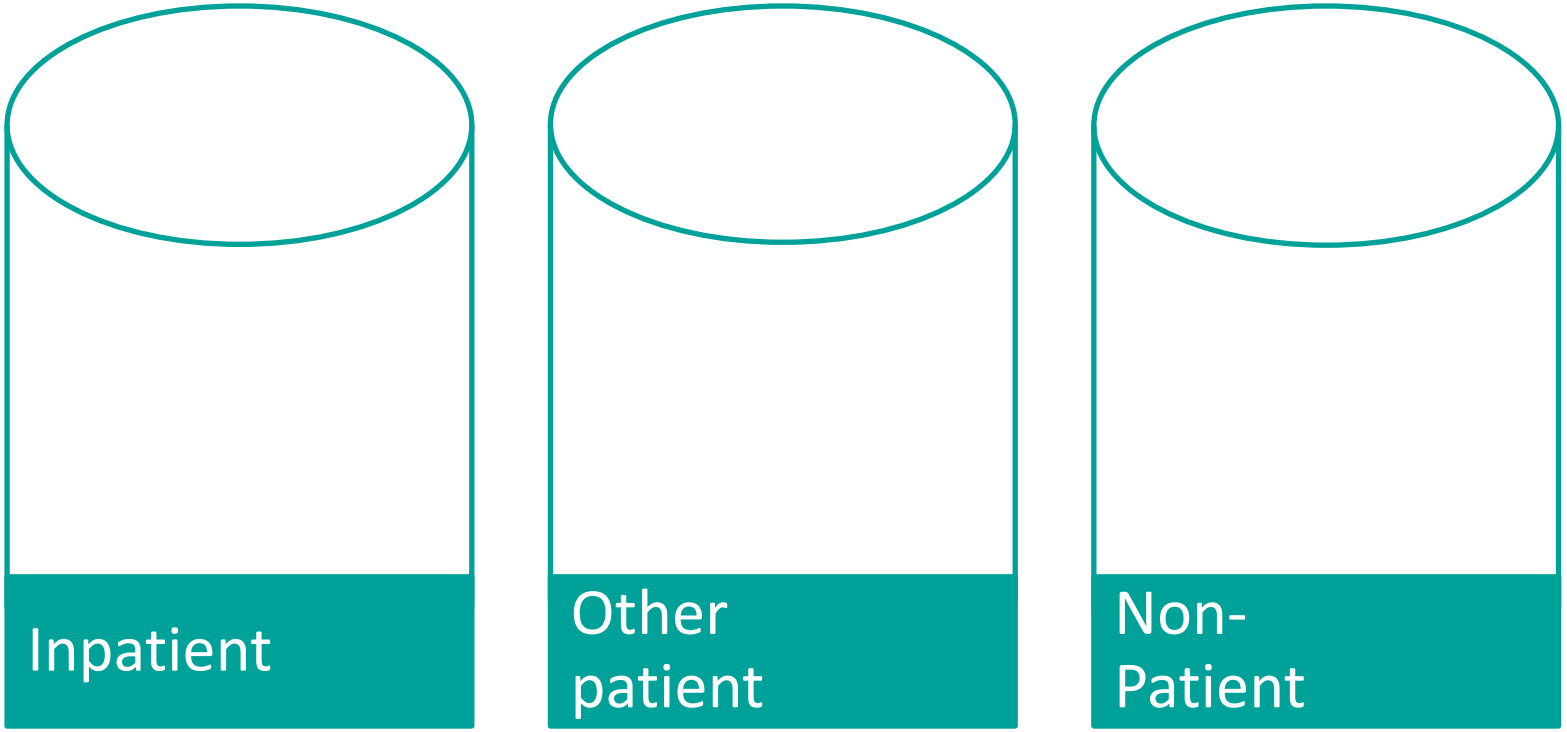
Define 3 cost pools



CIHI

CSHS methodology

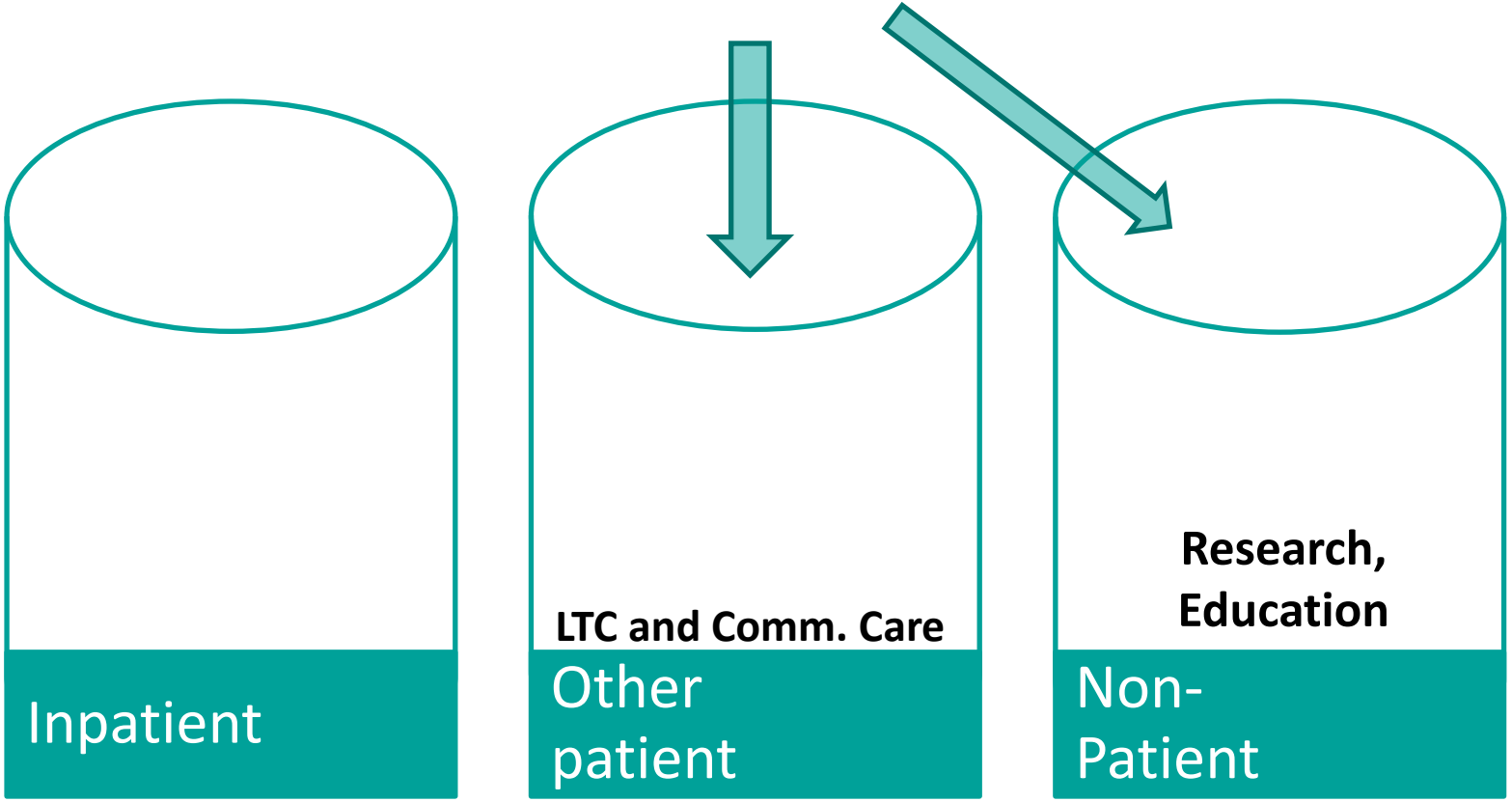
MD expenses, building amortization, termination benefits, negative expenses, positive revenues (REMOVED)



CIHI

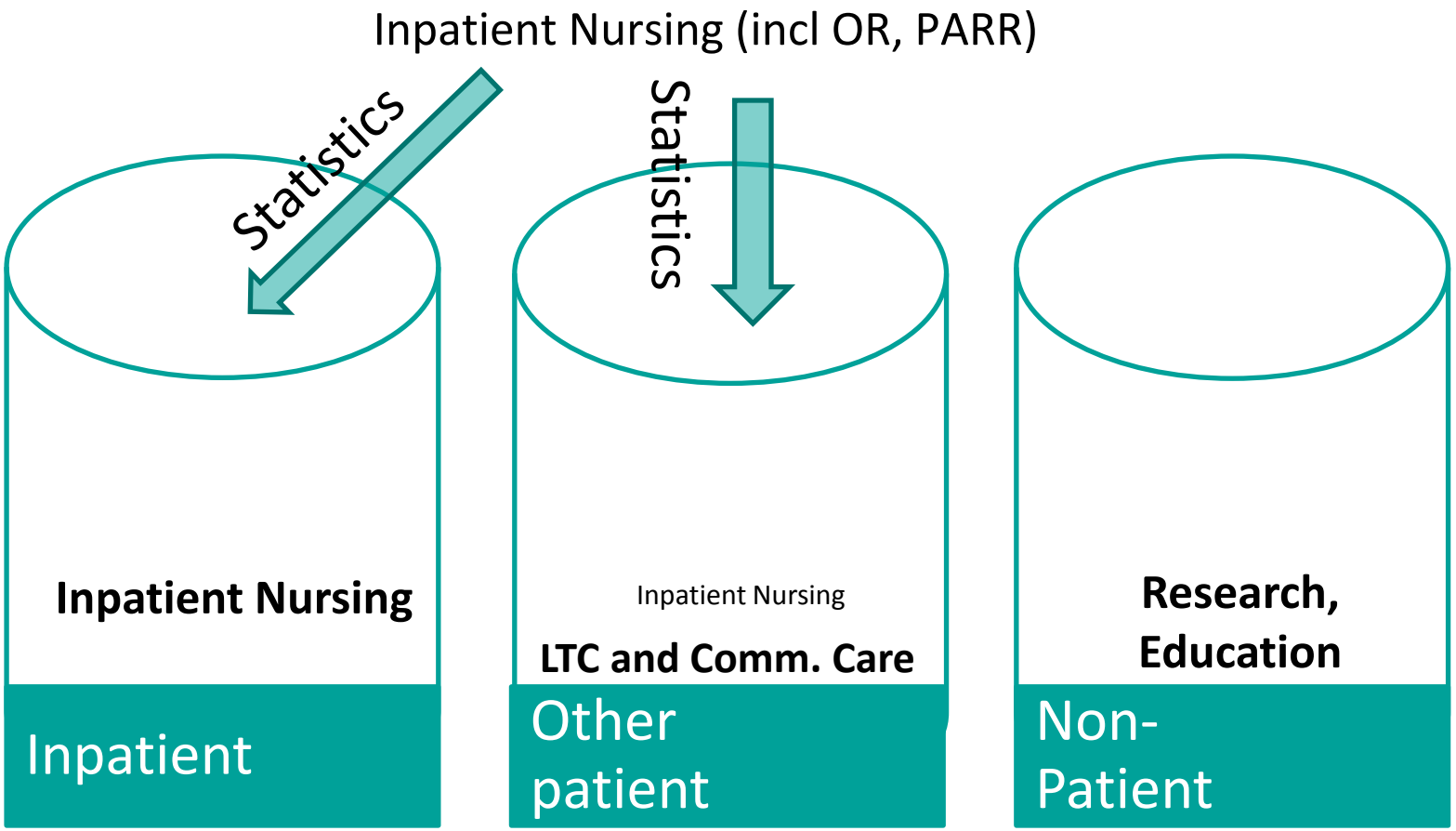
CSHS methodology

Long Term Care, Research, Education, Community Health Services



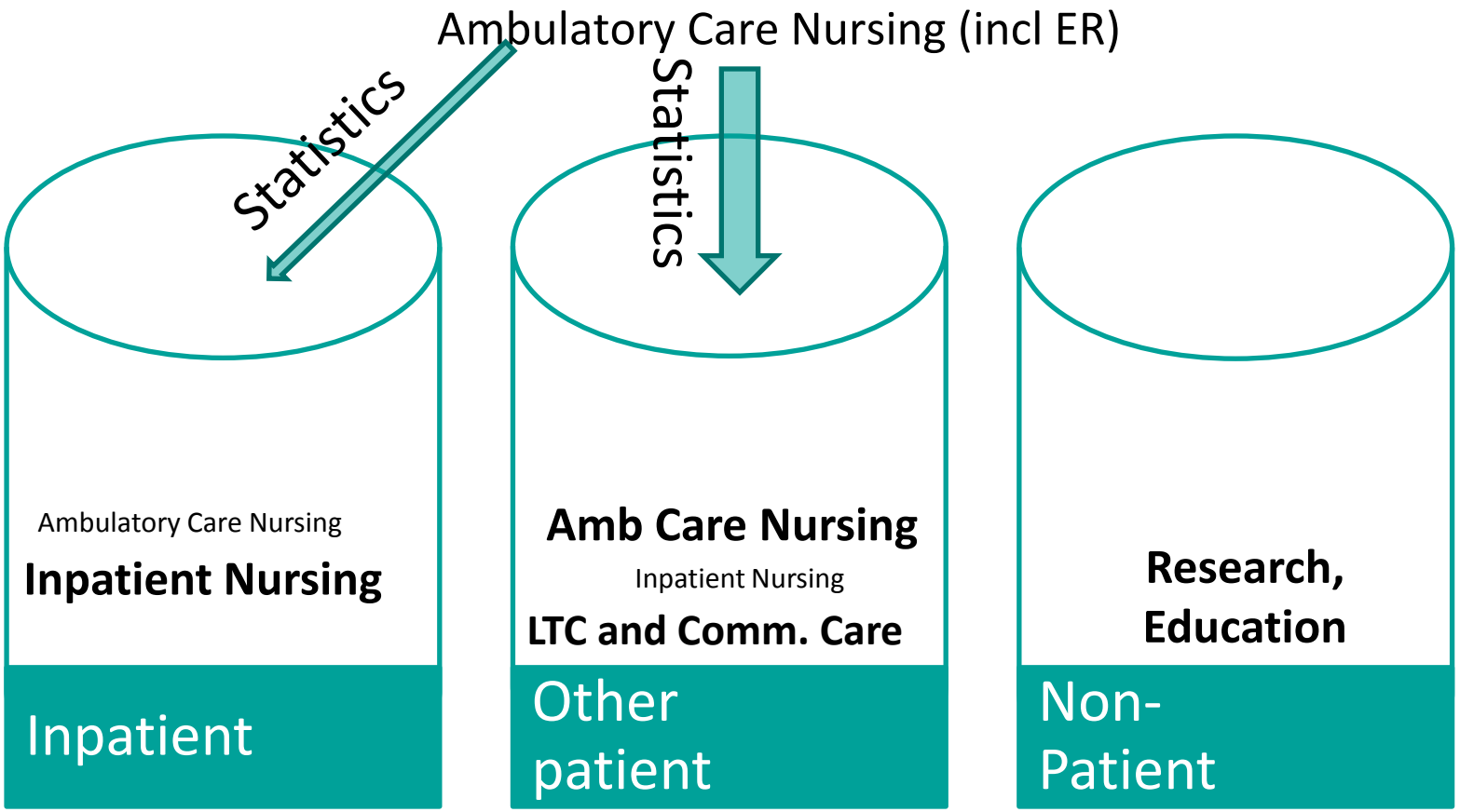
CIHI

CSHS methodology



CIHI

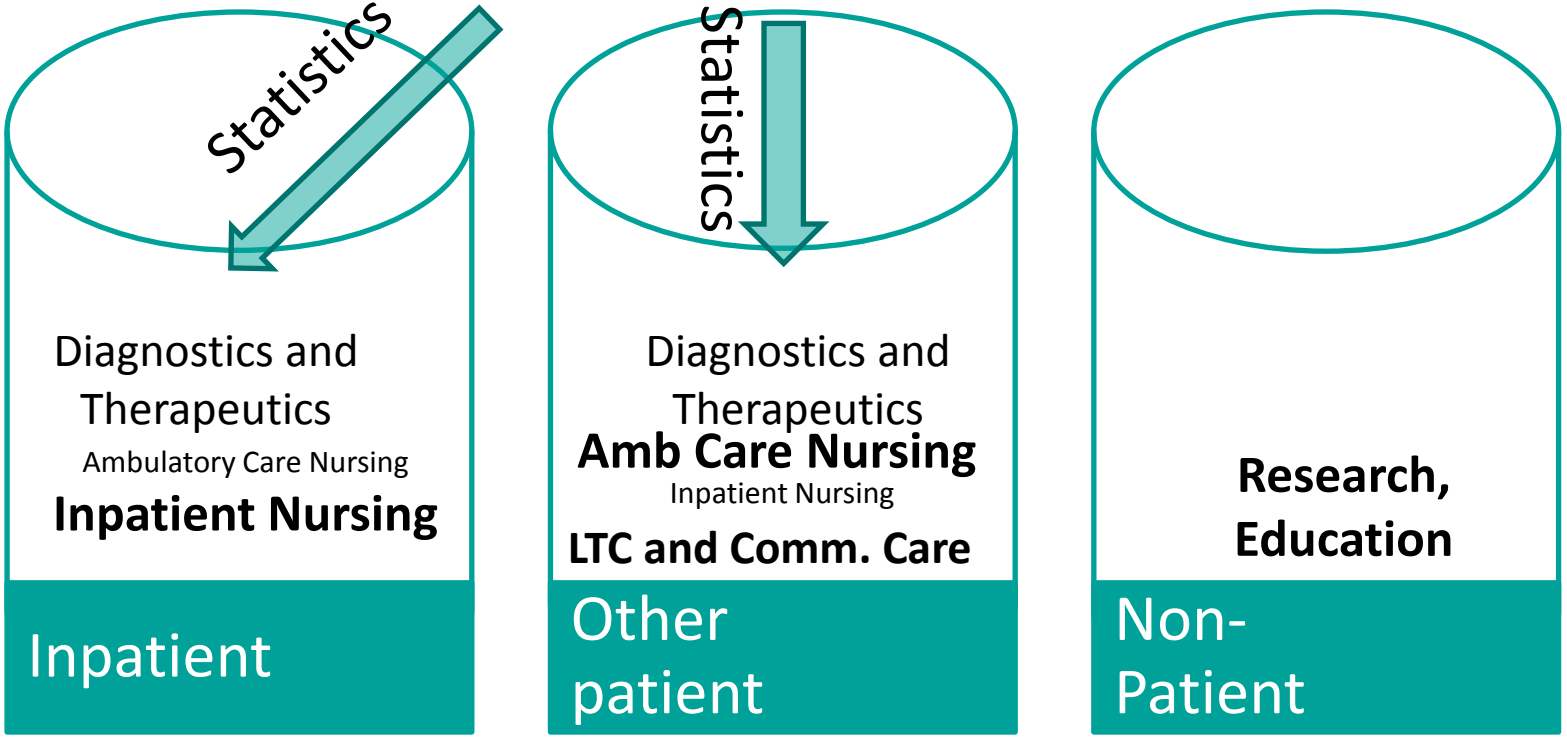
CSHS methodology



CIHI

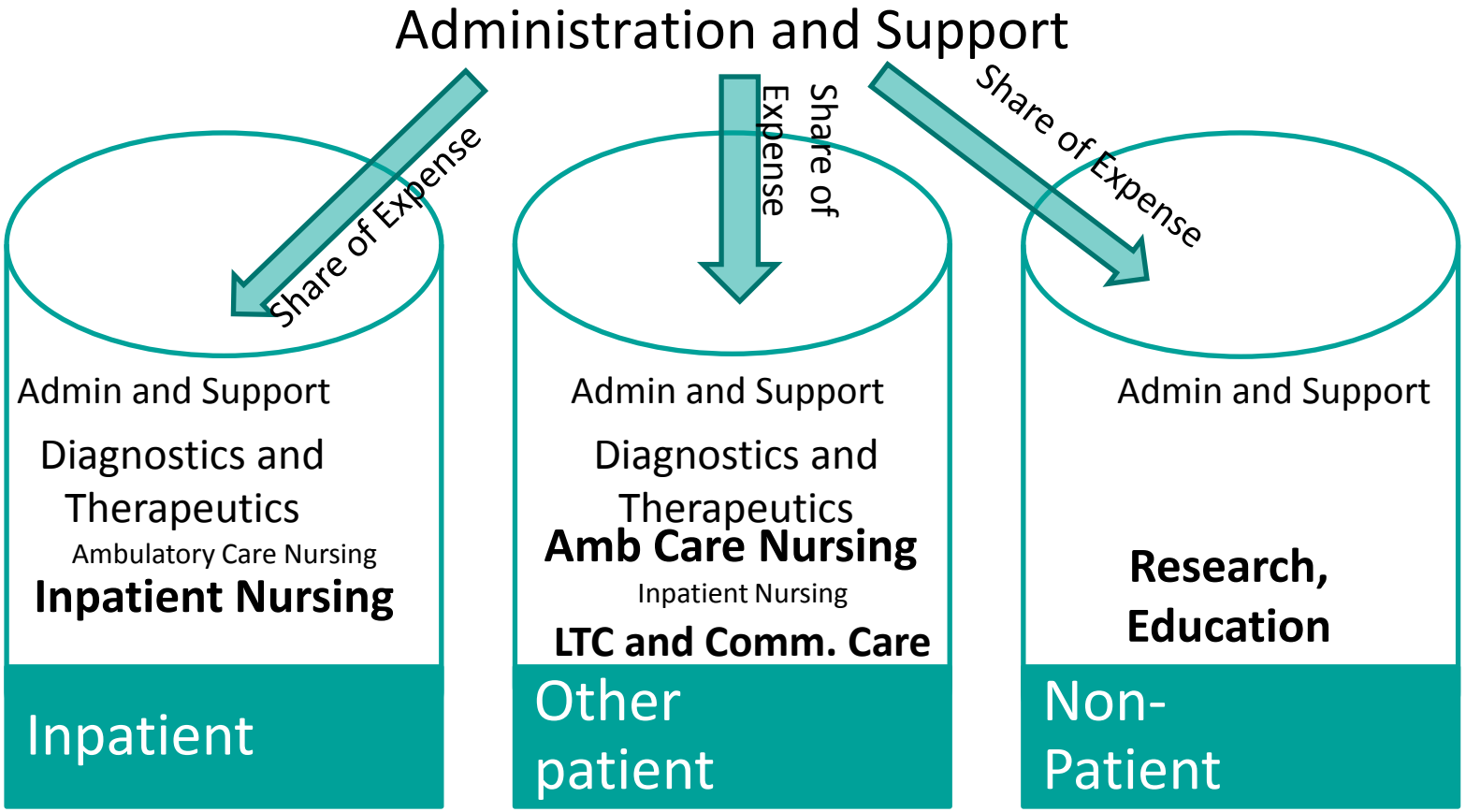
CSHS methodology

Diagnostic (Lab, MI, Resp. etc.) and
Therapeutics (PT, OT, Clin. Nut. etc.)



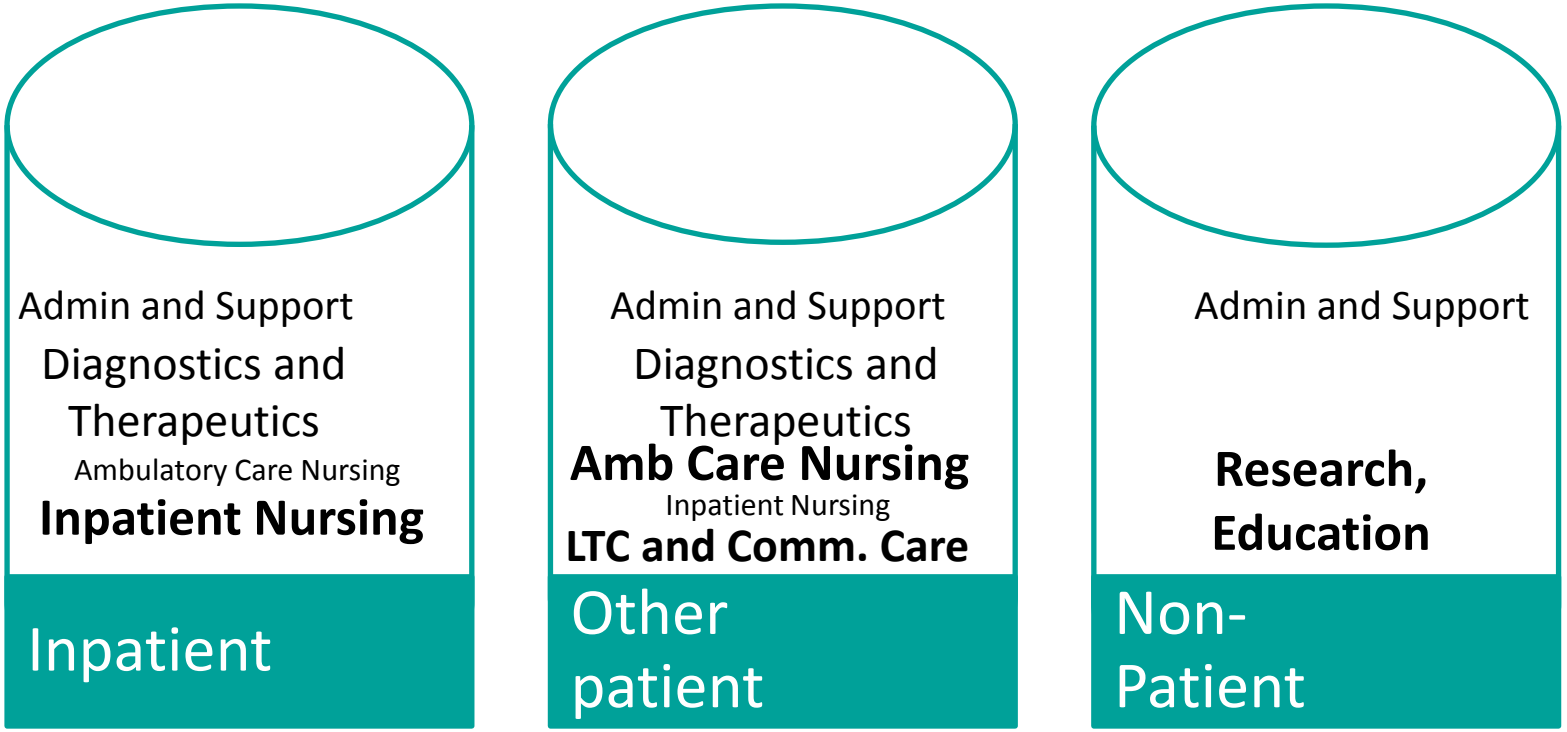
CIHI

CSHS methodology



CIHI

CSHS methodology



CIHI

Allocation methodology

- **Use best available data in each FC where possible**
- **Use linear regressions to determine reasonableness of data and the allocation methodology**
- **Allocation are done for each level 3 functional centre independently**
- **Test labour adjusted cost per workload (regression)**
  - Pass – use % workload for allocation of expenses
  - Fail – go to next allocation approach

Allocation methodology (cont'd)

- **No workload is reported or workload test fails**

	Service Activity is reported & does not contradict the category of SR reported in wkld	SA is not reported or contradicts the category of SR in wkld
71 2 (except OR/PARR)	National labour adjusted cost per visit x visits	100% inpatient
OR/PARR	National labour adjusted cost per visit x visits*	National average
71 3	National labour adjusted cost per visit x number of visits**	100% other patient
71 4	Test labour adjusted cost per service activity – if passes then use the % of service activity	National average

* Cost per Surgical visits, PARR visits and face-to-face visits are treated separately

** Cost per inpatient day x inpatient days is also considered for emergency

Remove:

Rehabilitation

71 2 80

IF:

- NRS
- Unique Institution type in DAD

Mental Health

71 2 75

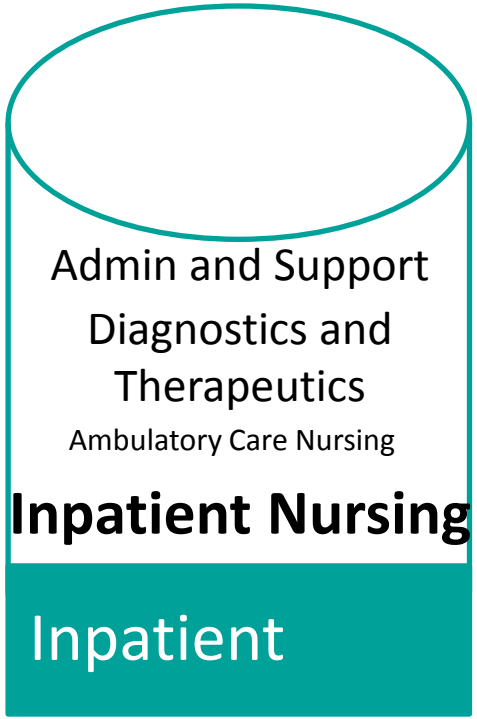
IF:

- OMHRS
- Unique Institution type in DAD

CIHI

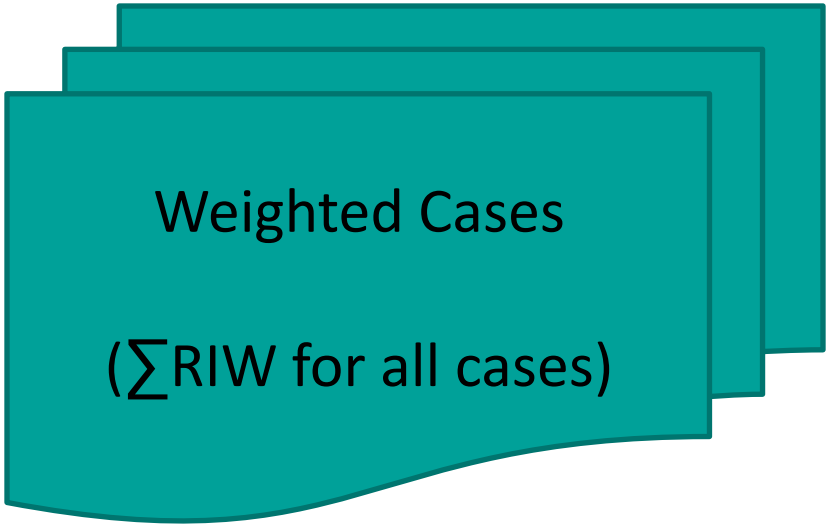
CIHI

CSHS methodology



Inpatient Costs

Inpatient Weighted Cases



Cost Of A Standard Hospital Stay (CSHS)

CIHI

Clinical Data Sources

- Discharge Abstract Database (DAD)
- Captures administrative, clinical and demographic information on hospital discharges and some day surgeries.
- National Ambulatory Care Reporting System (NACRS)
- Contains data for hospital-based and community-based ambulatory care.
- International Statistical Classification of Disease, 10th Revision, Canadian Version (ICD-10 CA) & Canadian Classification of Health Interventions (CCI)
- CIHI Case Mix Products:
- Grouping Methodologies: CMG+, CACS
- Statistics: RIW, ELOS

CIHI's case mix system for grouping acute inpatient data (CMG+)

Astronomical # of combinations of diagnoses and interventions

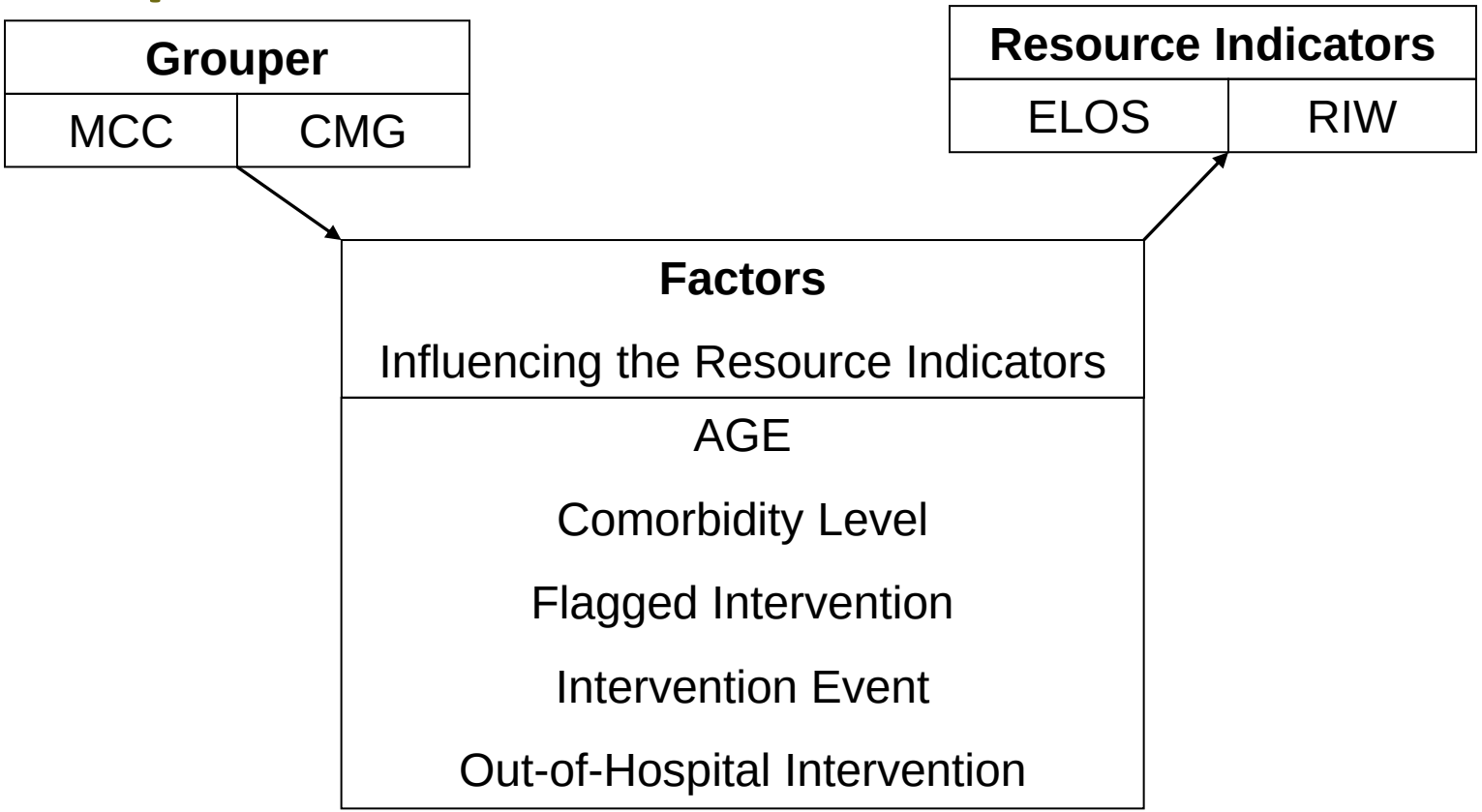
> 3,000,000 discharges in DAD

529 Case Mix Groups

Reasonable number of groups with which to make comparisons between patient types

Goal: Groupings with similar clinical and resource utilization characteristics

Components of CMG +



CIHI

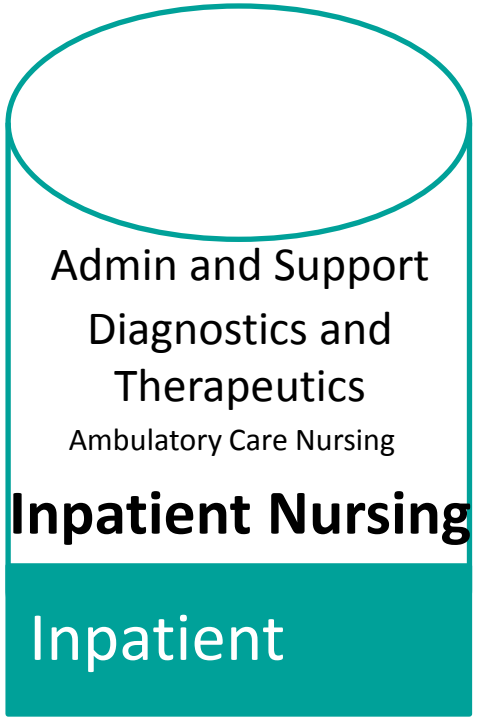
Resource Intensity Weights

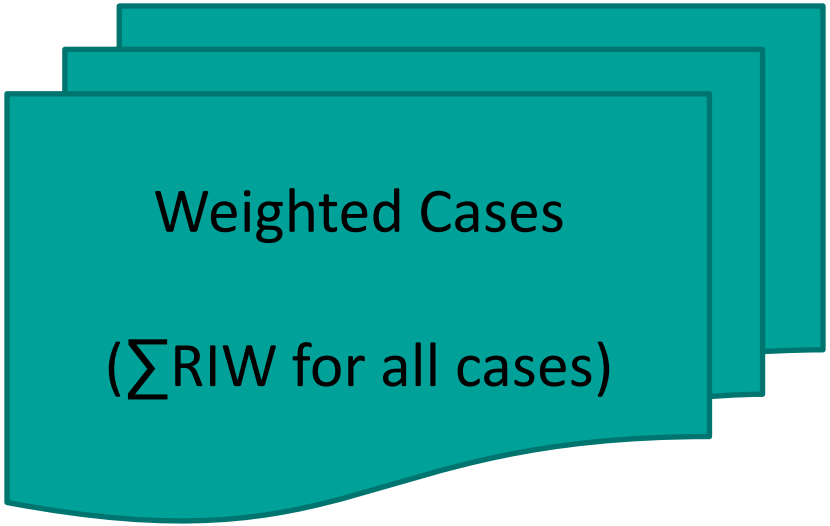
- **Resource – reflect total $$**
- **Intensity – amount of the service utilized**
- **Weight – relative value**
  - compared to an “average case” of 1.0000
  - Cases more resource intensive than the average are >1, those less intensive than the average are <1.

CSHS methodology

Inpatient Costs

Inpatient Weighted Cases

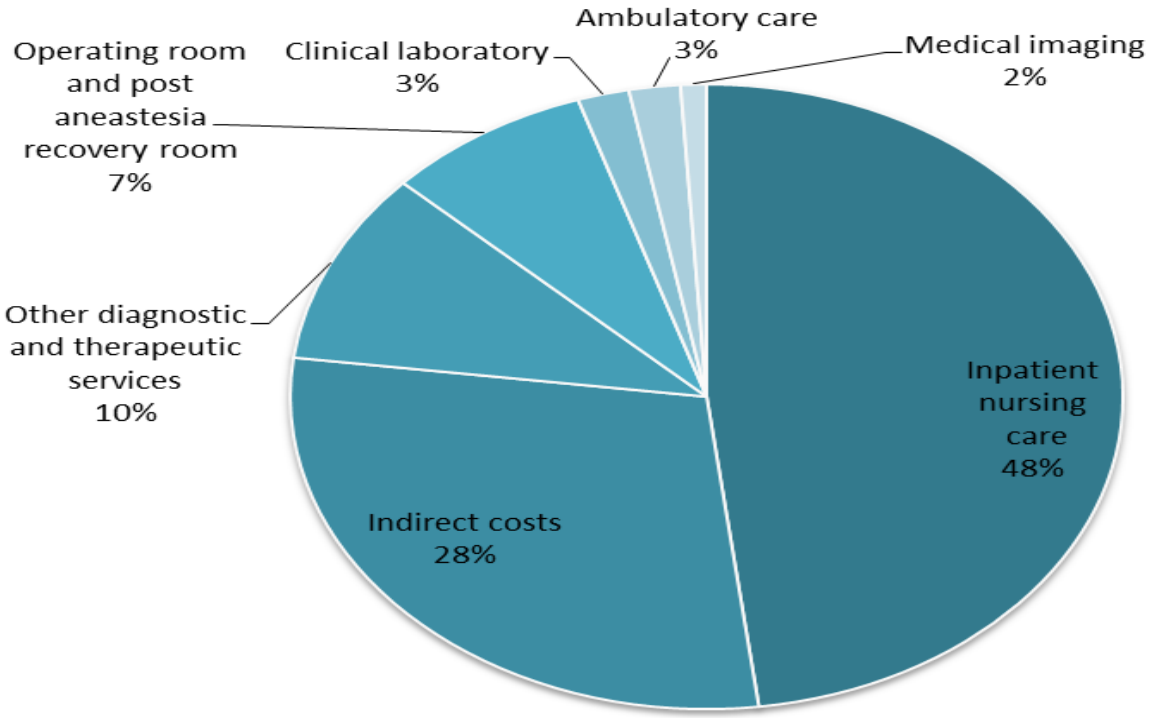




CIHI

CIHI

Generally across Canada – CSHS numerator is made up of:



CIHI

Data Quality - CMDB

What are the key principles of data quality for CMDB data?

- Compliant with the MIS chart of accounts
- Statistical & financial data
- Data must be reasonable
- MIS Compliance Assessment

CIHI

Canadian Institute for Health Information

Better Data. Better Decisions. Healthier Canadians.

Your Health System

This site's interactive tools will help you learn more about your health system and the health of Canadians.

Choose one of the following:

Your Health System
In Brief

Explore 15 indicators representing 5 themes that Canadians told us were important.

Your Health System
In Depth

Take a look at an expanded suite of indicators: find comparable results for hospitals and regions.

Your Health System
Insight

Health care providers and analysts can use this analytical tool to dig deeper into indicator results. Login required.

Follow us:

CIHI

Patient Cost Estimator

Patient Cost Estimator | Home | Top 10 | Across Canada | In Depth | Search by Common Language

Overview | Methodology | FAQ

Canadian Institute for Health Information
Institut canadien d'information sur la santé

Patient Cost Estimator

The **Patient Cost Estimator** (PCE) is an interactive tool developed by CIHI to estimate the average cost of various services provided in hospitals. This tool provides information nationally, by jurisdiction and by patient age group. The cost estimates represent the **estimated** average cost of services provided to the average typical inpatient in an acute care facility. They include the costs incurred by the hospital in providing services and exclude physician fees, since physicians are normally paid directly by the jurisdiction and not by the hospital.

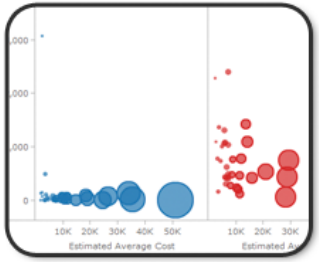
Use CIHI's PCE to find:

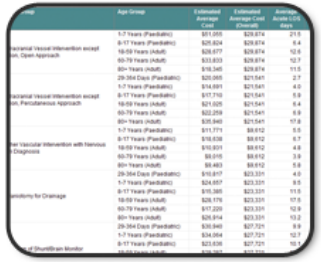
- Estimated average **costs** per Case Mix Group (CMG) by jurisdiction and age group
- Average **length of stay** by CMG by jurisdiction and age group
- **Volumes** by CMG by jurisdiction and age group
- Various summary reports

The PCE includes only typical patients who have undergone the expected course of treatment.

Variations across jurisdiction, including differences in care delivery models and labour rates, will limit the comparability of the PCE's results, so be cautious when interpreting the results.

You can export results from 2010–2011 to 2014–2015 to an Excel spreadsheet by using the Supporting Links below.





CIHI

Patient Cost Estimator (BC)

PAGE-BY: Fiscal Year: 2014-2015 Selected Jurisdiction: British Columbia

Case Mix Group		Age Group	Estimated Average Cost	Estimated Average Cost (all age groups)	Average Acute LOS days	Volume
166	Coronary Artery Bypass Graft with Coronary Angiogram with MI/Shock/Arrest with Pump	18-59 Years (Adult)	$39,733	$38,744	15.2	65
		60-79 Years (Adult)	$38,883	$38,744	16.5	149
		80+ Years (Adult)	$35,596	$38,744	16.4	27
320	Unilateral Hip Replacement	8-17 Years (Paediatric)	$8,589	$8,687	3.4	5
		18-59 Years (Adult)	$8,664	$8,687	2.9	1,169
		60-79 Years (Adult)	$8,693	$8,687	3.3	2,710
		80+ Years (Adult)	$8,713	$8,687	4.0	490
321	Unilateral Knee Replacement	18-59 Years (Adult)	$7,704	$7,714	3.1	1,226
		60-79 Years (Adult)	$7,723	$7,714	3.2	4,625
		80+ Years (Adult)	$7,663	$7,714	3.6	599

CIHI

Functional Centre FAR

Functional Area % by CMG										
Row Labels	Volume	N	A	O		L	G	P	I	
CMG		Inp Nursing Services	Outp Nursing Services	Operating & Recovery Room Nursing Services	Total Nurs	Clinical Lab	Medical Imaging	Other Professional Services	Indirect Costs	Grand Total
001-Intracranial Vessel Intervention except Extraction, Open Approach	556	42%	1%	19%	62%	2%	7%	4%	24%	100%
002-Intracranial Vessel Intervention except Extraction, Percutaneous Approach	604	39%	1%	2%	42%	2%	33%	3%	20%	100%
003-Other Vascular Intervention with Nervous System Diagnosis	768	36%	3%	12%	51%	3%	19%	4%	24%	100%
004-Craniotomy for Drainage	110	49%	1%	12%	62%	3%	4%	6%	25%	100%
005-Insertion of Shunt/Brain Monitor	1,008	40%	1%	25%	66%	2%	3%	5%	24%	100%
006-Cranium Intervention	2,136	36%	1%	26%	63%	4%	4%	4%	25%	100%
007-Thoracic/Major Intervention on Spine/Spinal Canal/Vertebra	1,414	28%	1%	38%	67%	2%	4%	3%	24%	100%
008-Other Site/Non-Major Intervention on Spine/Spinal Canal/Vertebra	1,837	28%	2%	36%	67%	2%	3%	3%	26%	100%
009-Excision/Repair of Brain	2,385	36%	1%	26%	62%	4%	3%	4%	27%	100%
010-Drainage/Release of Brain	748	41%	2%	21%	64%	2%	3%	4%	27%	100%
011-Management of Nervous System Device/Other Minor Intervention	732	35%	2%	27%	63%	4%	4%	3%	26%	100%
012-Open Carotid Endarterectomy	1,917	30%	2%	35%	67%	3%	2%	3%	26%	100%
013-Major Nerve Intervention or Intervention on other Site	456	24%	2%	38%	64%	5%	1%	3%	28%	100%

CIHI

And Now…the details

Functional centre	Reported quantity	Regional allocation	Clearing allocation	Exclusions	Recoveries	Net value
		add	add	subtract	Add (net)	
711100000	$1,000,000	$5,000		$10,000	($1,000)	$994,000
712100000	$5,000,000		$15,000	$40,000		$4,975,000
713100000	$3,000,000		$10,000	$20,000		$2,990,000
714100000	$4,000,000		$50,000	$30,000		$4,020,100
715100000	($400,000)	$2,000		($10,000)		$0

Transaction Data Cut | Analytical Data Cut | CSHS methodology

And Now…the details

Functional centre	Net value	IP Quant	OP Quant	NP Quant	Method
711100000	$994,000	$500,000	$350,000	$144,000	% of cost pool
712100000	$4,975,000	$4,960,000	$15,000		Workload
713100000	$2,990,000	$20,000	$2,970,000		Cost per visit
714100000	$4,020,100	$1,500,000	$2,520,100		National avg
715100000	$0				
717000000	$4,000,000			$4,000,000	

Comparing the FAR and CSHS breakdown reports

	Inpatient Nursing Services	Outpatient Nursing Services	Operating & Recovery Room Nursing Services	Total nursing	Clinical Lab	Medical Imaging	Other professional services	Indirect costs	Grand total
Facility specific Functional Area RIW	5,376.0523	485.4561	1,974.5843	7,836.0927	559.2888	569.4955	606.2926	3,182.4428	12,753.6124
Facility Specific FAR %	42.15%	3.81%	15.48%	61.44%	4.39%	4.47%	4.75%	24.95%	100%
Facility Specific CSHS breakdown report	33,776,320	769,290	828,276	35,373,886	1,435,053	1,749,390	6,577,200	14,501,492	59,637,021
Facility Specific CSHS FA %	56.64%	1.29%	1.39%	59.32%	2.41%	2.93%	11.03%	24.32%	100%

CIHI