

Developing risk-adjusted primary care capitation payments in Ontario, Canada using the CIHI population grouper.

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PCSI
Annual Conference
May 30, 2024

Ontario Canada

- 14.6M Population
- Health insurance
 - Universal
 - Publicly funded and administered



Background: Family Health Organizations

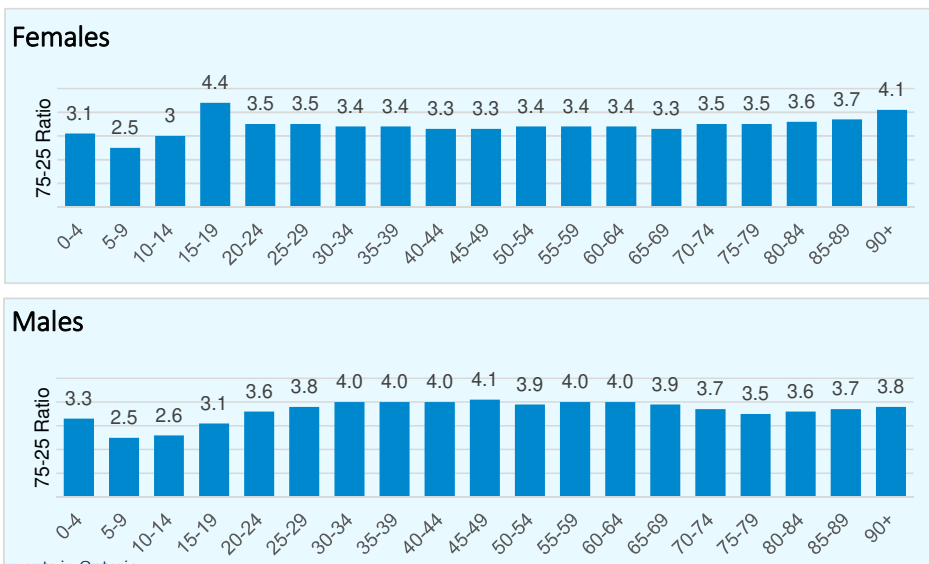
- FHOs are the most common primary care physician payment model in Ontario with 6,278 physicians – 36% of family physicians.
- This group care model reimburses physicians via a combination of capitation payments, fee-for-service fees, and incentive premiums.
- Since their introduction in 2007 the capitation payments have been based solely on the **age and sex** of the patients on their roster.

Background: Current capitation rates

1. Age and sex poor predictors of need

Total variation	7.9157
Explained by age and sex	0.0192
NOT explained by age and sex	7.8965
R ²	0.20%

2. Significant variation in need within each group

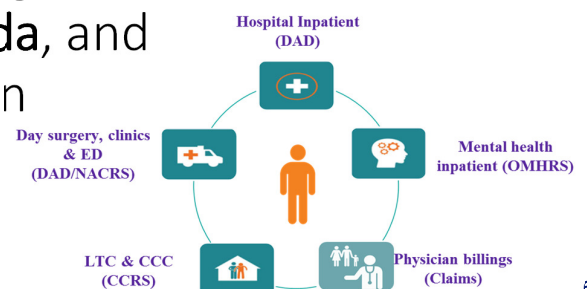


Background: Physician Services Agreement

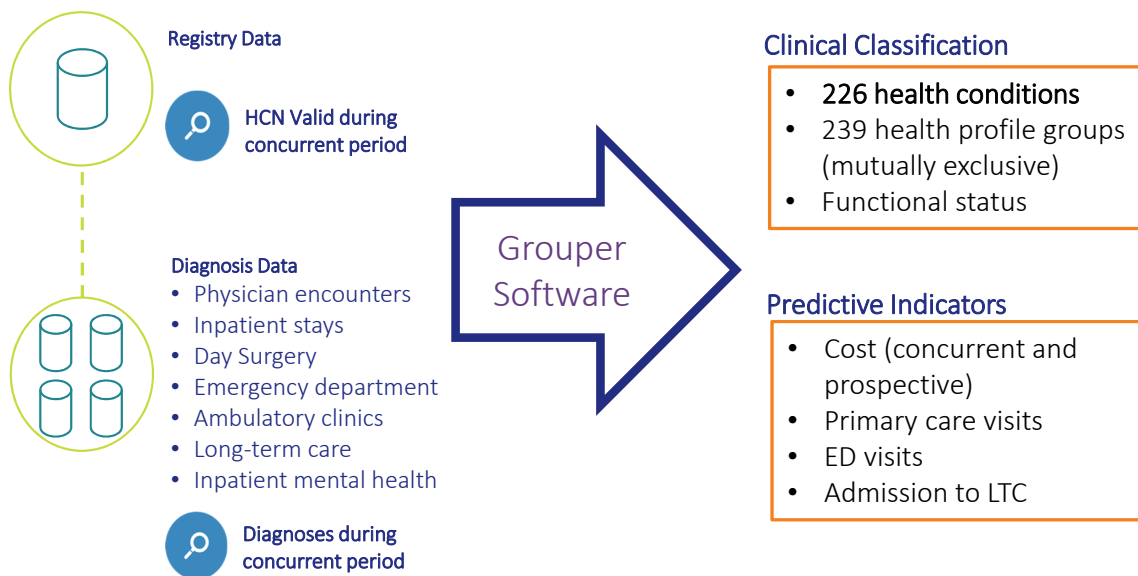
- Any significant changes to the funding model are negotiated between the Ontario government and the Ontario Medical Association.
- Over the past 15 years attempts were made to update the capitation payment to account for patient acuity/complexity.
- Finally in 2022 an agreement was reached, between the Ontario MoH and the OMA, to incorporate a risk-adjustment factor into the capitation payments for FHOs, that uses the Canadian Institute for Health Information (CIHI) population grouping methodology.

Background: CIHI Population Grouper

- The CIHI population grouper uses **person level diagnostic information** available in **administrative data** to:
 - classify people based on their morbidity level and health conditions, and
 - facilitate prediction of their expected resource use and other outcomes.
- The CIHI grouper was specifically designed for use with administrative data available in **Canada**, and accounts for data differences between the provinces.



Background: CIHI Population Grouper



Background: Data availability

	Diagnostic data available						Payment
	T-6	T-5	T-4	T-3	T-2	T-1	T
Diagnostic information	Available	Available	Available	Available	Available	Not Available	Not Available
Primary care utilization	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Available

Objective

This research developed and evaluated an approach for using of the CIHI Population Grouper for risk adjusting the primary care capitation payments for FHO physicians in Ontario, Canada

Methods: Approach - Development

1. A risk score for primary care physician utilization was calculated for all residents of Ontario based on:
 - age,
 - sex,
 - health conditions generated by the CIHI Population Grouper
2. Based their risk score, the people in each age-sex group were assigned to one of five Primary Care Utilization Bands (PCUB).
3. Each PCUB was assigned a relative weight which indicates their predicted level of primary care resource use.

Methods: Approach - Evaluation

4. Ran regression models to evaluate the ability of PCUB weights to predict the total primary care utilization of each physicians' patient roster.
5. The analysis was repeated with diagnostic information from one year prior to primary care utilization.

Methods: Outcome variable

- Primary care physician service utilization
 - Fee codes that make up the FHO basket of service
 - Sum of the fee value of all in-basket physician claims submitted by family physicians.
 - Includes paid and shadow-billed

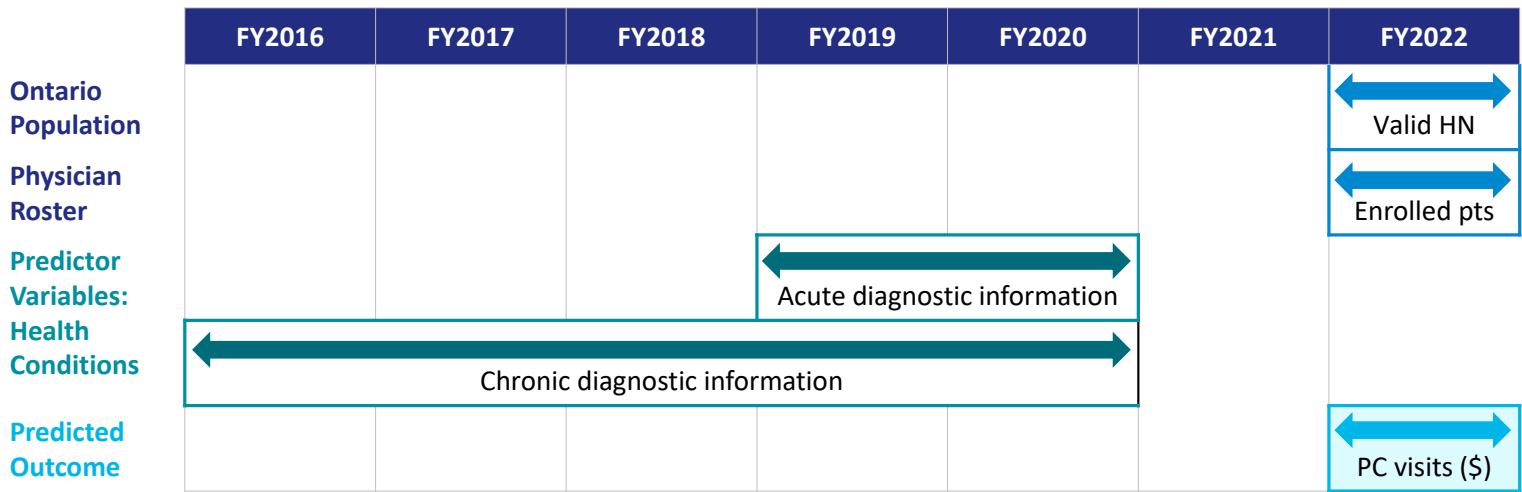
Methods: Predictive variables

- Age
- Sex
- Health conditions (N=226)
 - Identified by the CIHI population grouper
 - Acute conditions based on diagnoses from **two** years (FY2019-FY2020)
 - Chronic conditions based on diagnoses from **five** years (FY2016-FY2020)
- Interactions (N=460)
 - Dummy variable indicating combinations of health conditions

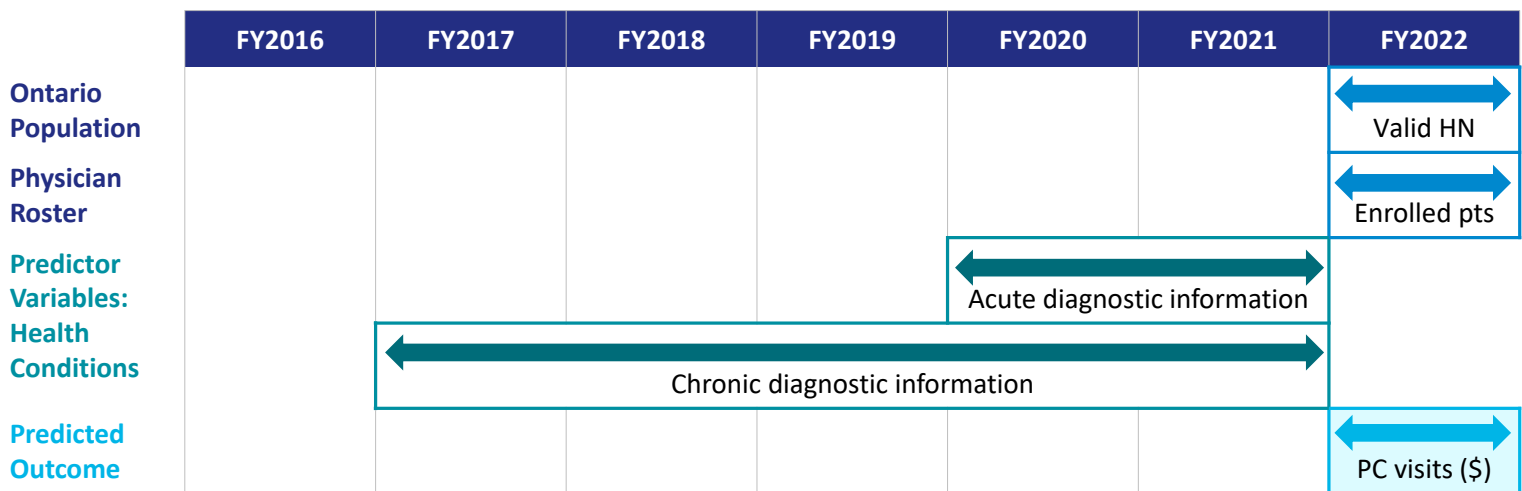
Results: Top health conditions in Ontario

Health Condition	Frequency	Health Condition	Frequency
H46 - Joint/Tendon Disorder and Injury (incl. Pain, Sprain)	2,750,307	I09 - Other Condition of Skin/Subcutaneous Tissue	726,661
C42 - Acute ENT, Upper Respiratory Condition	2,746,379	K42 - Urinary Tract Infection/Cystitis	711,327
E10 - Hypertension	1,853,827	D44 - Acute and Other Respiratory Diseases & Disorders	677,454
K03 - Other Disease/Disorder Bladder & Urethra	1,828,758	Q82 - Mental Health Signs & Symptoms	676,805
F81 - Signs, Symptoms Digestive & Hepatobiliary System	1,787,556	J09 - Hypercholesterolaemia and other Dyslipidemia	658,098
Q11 - Neurotic/Anxiety/Obsessive Compulsive Disorder	1,662,884	I03 - Eczema/Dermatitis/Hives	653,103
P43 - Other Viral Infection	1,075,874	H44 - Other Fracture/Dislocation	647,359
H06 - Vertebral/Disk & Other Disease of Back	1,051,063	F41 - Acute Gastrointestinal Infection	632,319
J02 - Diabetes Mellitus	1,026,355	P45 - Other & Unspecified Infection	625,600
I42 - Skin Infection (incl. Cellulitis)	967,076	D06 - Asthma	567,657
E82 - Signs, Symptoms Cardiovascular System	961,168	I43 - Superficial Skin Injury/Contusion/Non-Serious Burn	551,020
D81 - Signs, Symptoms Respiratory System	911,169	J10 - Obesity	546,233
L02 - Menstruation Disorder (incl. Menopause)	836,487	B01 - Cataract/Lens Disorder	536,384
H02 - Osteoarthritis	801,014	C41 - Otitis Media	534,036
F04 - Gastritis & Duodenitis	780,876	B42 - Infection/Inflammation Eye	530,214
H09 - Myositis and Soft Tissue Disorder (incl Muscle Inflam)	768,060	J08 - Malnutrition & Vitamin Deficiency	526,474
H81 - Neuromuscular Signs & Symptoms	744,016	I06 - Benign Skin Neoplasm	522,501

Methods: Operational timeline (T-2)



Methods: Evaluation timeline (T-1)



Results 1: Population models

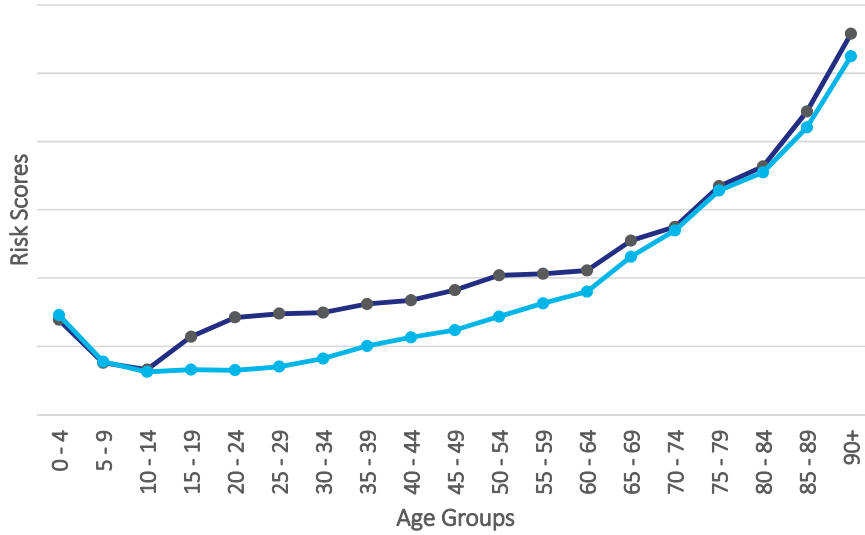
Model	2022 primary care utilization modeled on	R ²
Current	= [age] + [sex]	0.2%
Operational	= [226 health conditions from 2020 CIHI PG] + [460 interactions from 2020 CIHI PG] + [age] + [sex]	10.0%
Evaluation	= [226 health conditions from 2021 CIHI PG] + [460 interactions from 2021 CIHI PG] + [age] + [sex]	11.0%

Results 2: Primary care utilization bands

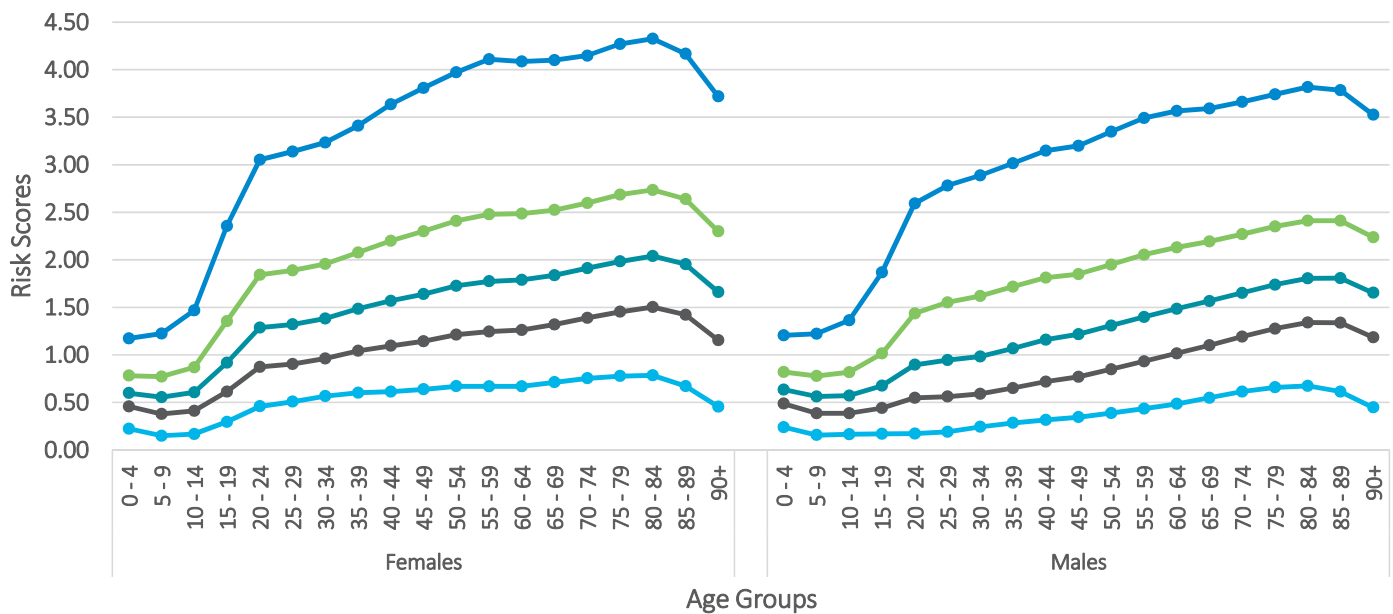
Age Group	Females					Males				
	Band 1	Band 2	Band 3	Band 4	Band 5	Band 1	Band 2	Band 3	Band 4	Band 5
0 to 4	0.22	0.46	0.60	0.78	1.17	0.24	0.49	0.63	0.82	1.21
5 to 9	0.15	0.38	0.56	0.77	1.22	0.16	0.39	0.56	0.78	1.22
10 to 14	0.17	0.41	0.61	0.87	1.47	0.17	0.39	0.57	0.82	1.36
15 to 19	0.30	0.61	0.92	1.36	2.36	0.17	0.44	0.68	1.01	1.87
20 to 24	0.46	0.87	1.29	1.84	3.05	0.17	0.55	0.90	1.44	2.59
25 to 29	0.51	0.90	1.32	1.89	3.14	0.19	0.56	0.95	1.55	2.78
30 to 34	0.57	0.96	1.38	1.96	3.23	0.24	0.59	0.98	1.62	2.89
35 to 39	0.60	1.04	1.48	2.08	3.41	0.29	0.65	1.07	1.72	3.01
40 to 44	0.61	1.10	1.57	2.20	3.64	0.32	0.72	1.16	1.81	3.15
45 to 49	0.64	1.14	1.64	2.30	3.81	0.35	0.77	1.22	1.85	3.20
50 to 54	0.67	1.21	1.73	2.41	3.97	0.39	0.85	1.31	1.95	3.35
55 to 59	0.67	1.25	1.77	2.48	4.11	0.44	0.93	1.40	2.05	3.49
60 to 64	0.67	1.26	1.79	2.49	4.09	0.49	1.02	1.49	2.13	3.57
65 to 69	0.71	1.32	1.84	2.52	4.10	0.55	1.10	1.57	2.19	3.59
70 to 74	0.75	1.39	1.91	2.60	4.15	0.61	1.19	1.65	2.27	3.66
75 to 79	0.78	1.45	1.98	2.69	4.27	0.66	1.28	1.74	2.35	3.74
80 to 84	0.78	1.50	2.04	2.74	4.33	0.67	1.34	1.81	2.41	3.82
85 to 89	0.67	1.42	1.95	2.64	4.17	0.61	1.34	1.81	2.41	3.78
90+	0.46	1.16	1.66	2.30	3.72	0.45	1.19	1.65	2.24	3.53

Results 2: Primary care utilization bands

Current age-sex risk rate



Results 2: PCUB Weights



Results 3: Roster models – R²

Model	2022 primary care utilization of FHO Physicians' rosters modeled on	R ²
Current	= [Sum of age/sex adjusted capitation scores of roster]	55%
Operational	= [Sum of PCUB scores of physician roster – 2020 CIHI PG]	77%
Evaluation	= [Sum of PCUB scores of physician roster – 2021 CIHI PG]	80%

Conclusions

- Adjusting FHO capitation payments using the CIHI population grouper will bring compensation levels more in alignment with the actual primary care utilization of rostered patients.
- Besides resulting in more equitable physician compensation, this would also provide more of an incentive for physicians to enroll higher needs patients.
- There is minimal impact of using morbidity measures from two years prior compared to one year prior to the payment year.

 **OMA** Ontario Medical Association

Thank you.



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