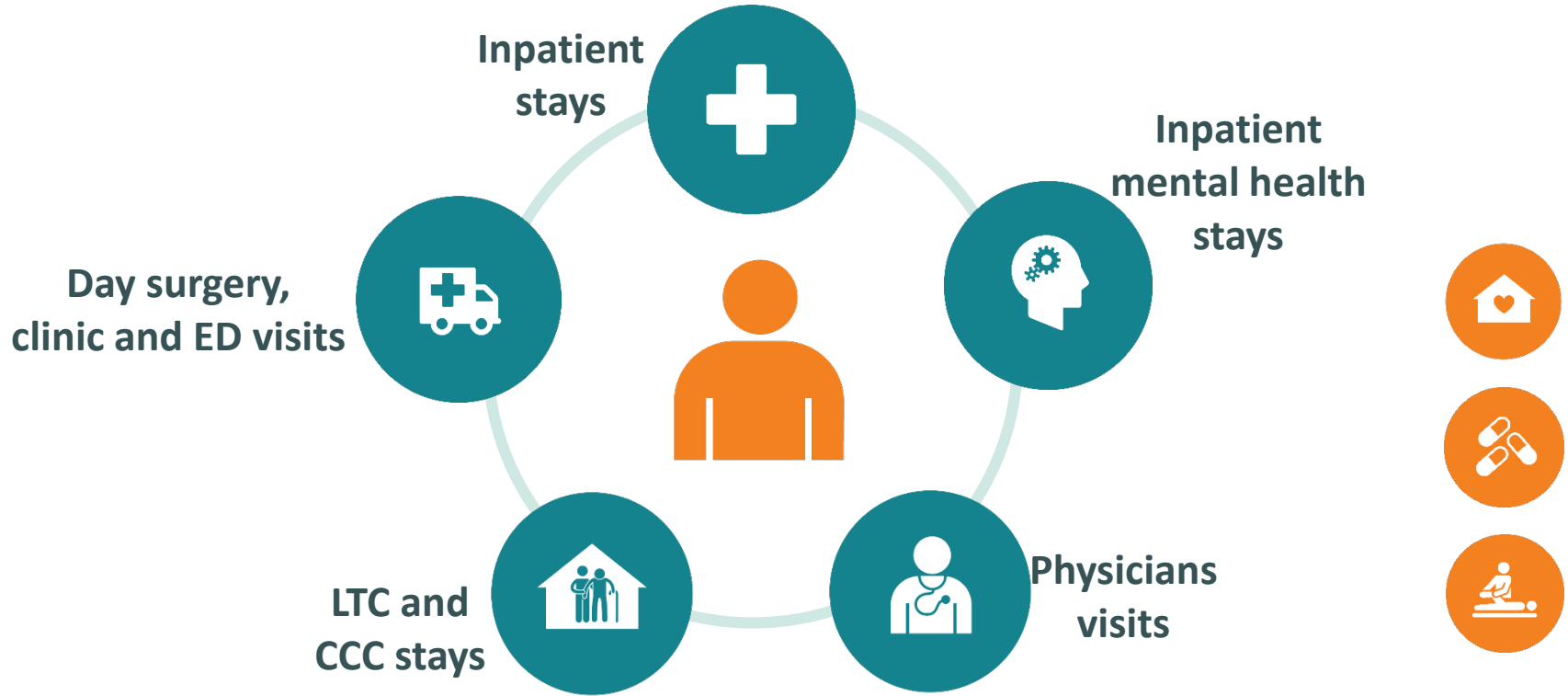


# CIHI's Population Grouping Methodology: Beyond Predicting Costs

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# CIHI's Population Grouping Methodology



# POP grouper outputs

Predicts for study period and 1 year into the future

## Clinical profile

- 226 health conditions
- Health profile group
- Functional status
- Health services accessed
- Demographics (age, sex, SES, geography)

## Predictive indicators

- Cost weights
- Number of primary care visits
- Number of ED visits
- Probability of admission to LTC



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# Developing predictive models of selected service use



## Models

- Linear regression
- Logistic regression

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## Predictor variables

- 226 health conditions and influential 2-way interactions
- Age
- Sex

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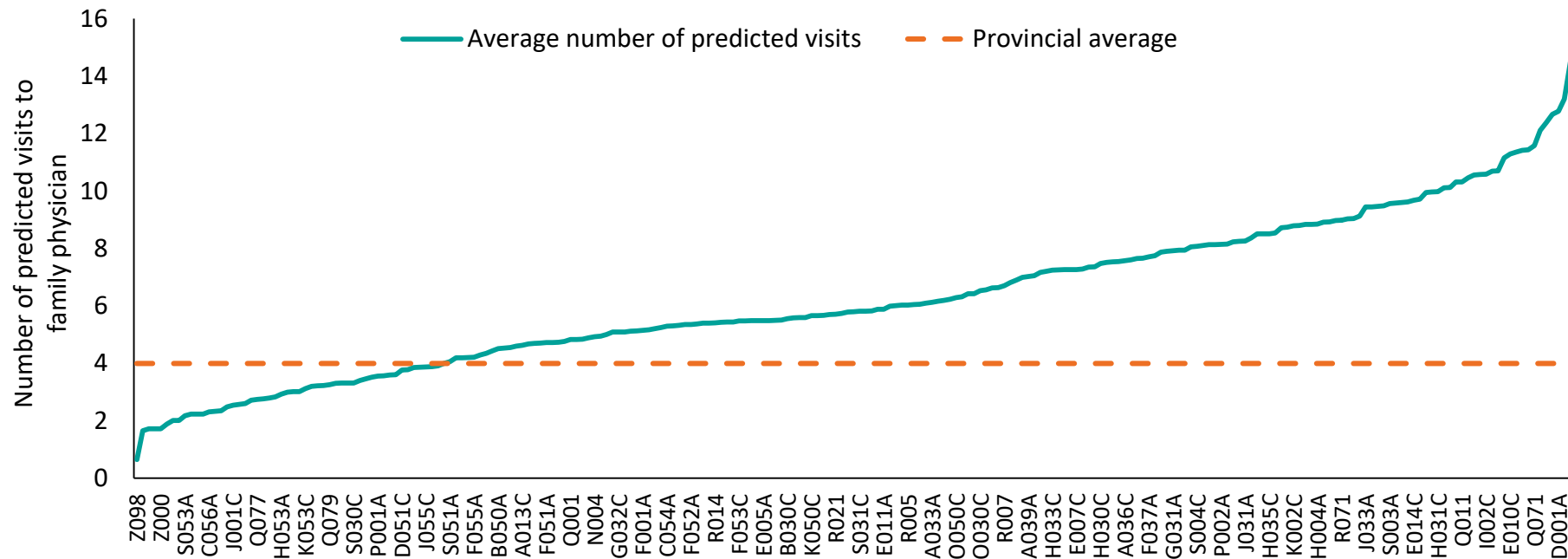
## User types modelled separately

- Health system non-users
- Health system users with 0 health conditions
- Health system users with 1+ health conditions

# Predicting future service needs



# Predicted use of primary care services by health profile groups



239 health profile groups (ranked from lowest to highest number of predicted visits)

**Source**

2010–2011 and 2011–2012 Alberta data used in methodology development.

# Predicted use of primary care services by health profile groups

Health profile group	Percent of cases	Average number of pred. visits to FP
Health system non-users	10.9%	< 1
Open wound	0.9%	2
Other viral infection	0.2%	2
Otitis media	0.6%	2
Health system user without health conditions	4.5%	2
Acute myocardial infarction with heart failure + comorbidities	0.1%	12
Diabetes/hypoglycemia with PVD/other chronic vasc Dx + comorbidities	0.1%	13
Respiratory failure with heart failure	0.03%	13
Pulmonary hypertension	0.1%	13
Heart failure with CAD/arrhythmia + comorbidities	0.3%	15

**Source**  
2010–2011 and 2011–2012 Alberta data used in methodology development.



# Capacity planning for primary care: Gap analysis

	Province	A	B	C	D	E
<b>Average number of visits</b>	<b>3.96</b>	3.97	4.05	3.84	4.15	3.32
<b>Average predicted visits</b>		4.32	4.06	4.23	4.19	4.04
<b>Standardized Utilization Index (SUI)</b> (average actual visits/provincial average)		1.00	1.02	0.97	1.05	0.84
<b>Standardized Needs Index (SNI)</b> (average predicted visits/provincial average)		1.09	1.03	1.07	1.06	1.02
<b>Need–Use Gap</b> (SUI – SNI)		-0.09	-0.01	-0.10	-0.01	-0.18

**Source**  
2010–2011 and 2011–2012 Alberta data used in methodology development.

# Profiling urban/rural variation in ED service

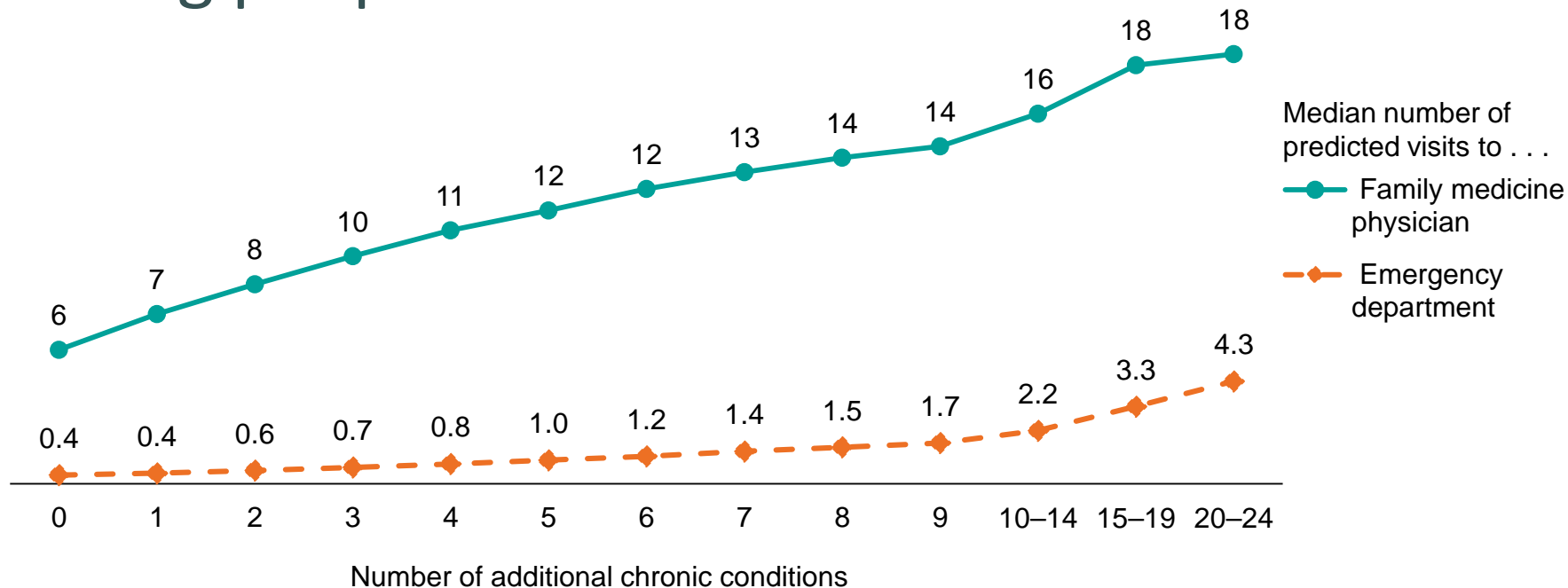
In rural areas, 45% of people are visiting the ED more than we would expect, based on their health needs.

Compare actual and predicted ED visits	Rural	Urban	Total
Actual < Predicted	17%	32%	29%
Actual ≈ Predicted	39%	50%	48%
Actual > Predicted	<b>45%</b>	18%	23%

**Source**

2010–2011 and 2011–2012 Alberta data used in methodology development.

# Predicting use of primary care and ED services among people with diabetes



## Source

2010–2011 and 2011–2012 Alberta data used in methodology development.

# LTC admission indicator

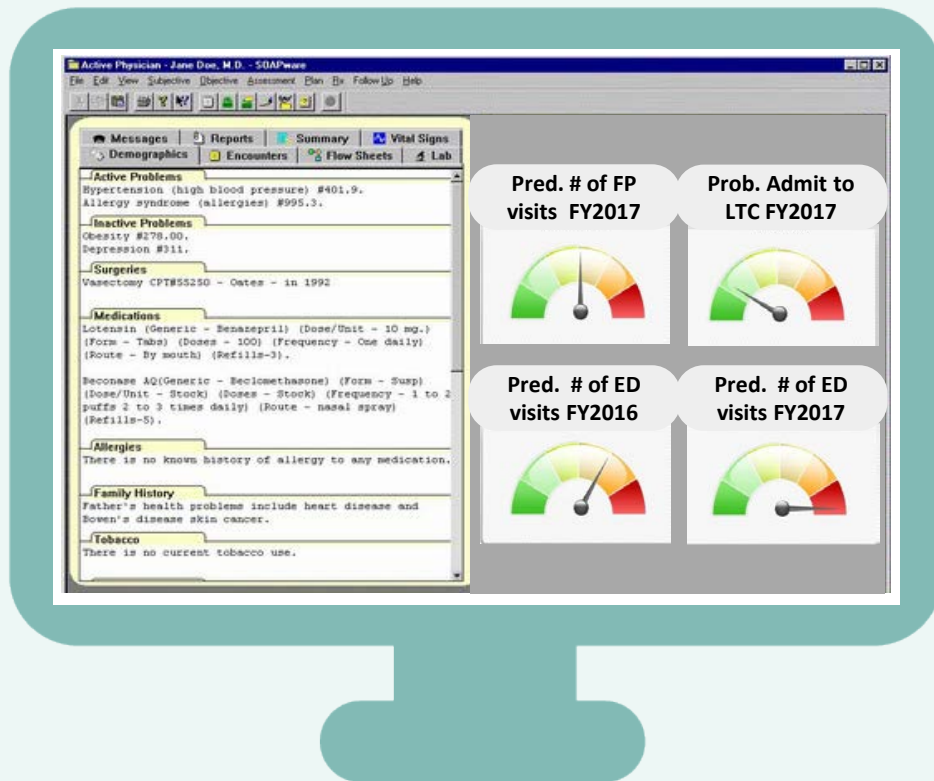
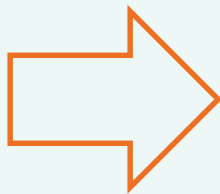
POP grouper prediction			Actual	
Ventile	Number of people	Average predicted number of admissions	Average actual number of admissions	Proportion of admissions
1	153K	63	93	0.3%
2	153K	133	52	0.1%
3	153K	173	82	0.2%
4	153K	201	125	0.3%
17	153K	1,922	1,923	5.4%
18	153K	2,643	3,066	8.6%
19	153K	4,263	6,063	17.0%
20	153K	18,994	18,845	<b>52.7%</b>

**53% of LTC admissions in the top 5%**

**Source**

2010–2011 and 2011–2012 Alberta data used in methodology development.

# Use of population grouper at points of care







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**Better data. Better decisions. Healthier Canadians.**

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