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Canada's Housing Affordability Trajectory

Projections through the lens of predictive modelling and machine learning

Aaron Pittman
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Head of Institutional Investment Services

The Past, Present & Future?

“...every improvement in the circumstances of the society tends...to raise the real rent of land...”

The Wealth of Nations

The Challenge



Demographics &
Population Growth



Bringing New Supply
Onstream



Productivity



The Donut

Population Growth

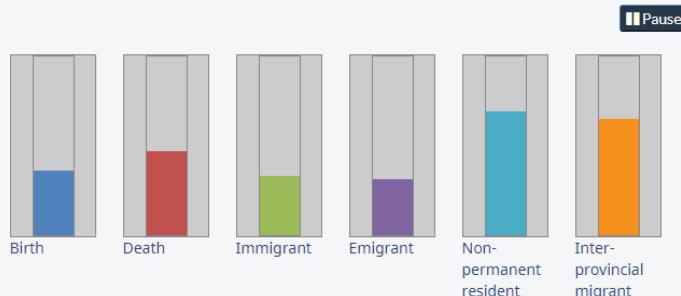
Population of Canada (real-time model)

41,859,696

Population
change since
midnight

1,644

Current time is 2:23:55 PM EST Monday, November 25, 2024



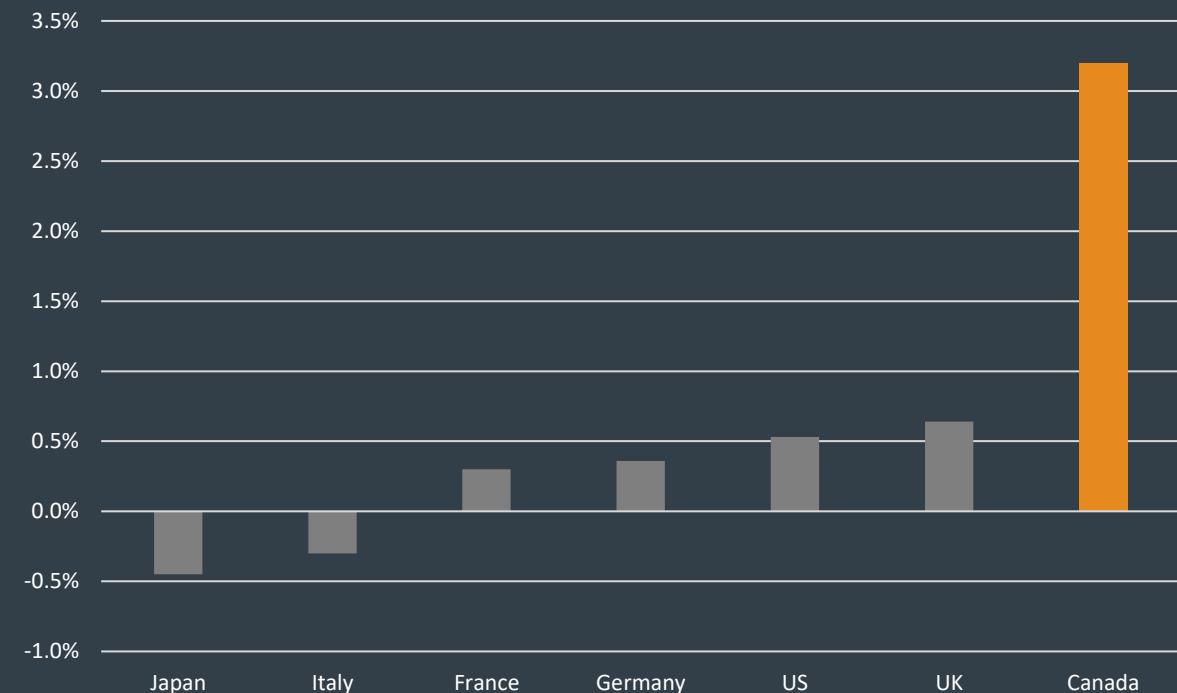
Population of provinces and territories (real-time model)

Provinces and territories	Population
Newfoundland and Labrador	547,965
Prince Edward Island	181,284
Nova Scotia	1,086,744
New Brunswick	865,033
Quebec	9,147,337
Ontario	16,382,139
Manitoba	1,512,539
Saskatchewan	1,254,782
Alberta	4,965,158
British Columbia	5,783,094
Yukon	47,215
Northwest Territories	44,858
Nunavut	41,548

Note: The population values in this table are modelled in real time.

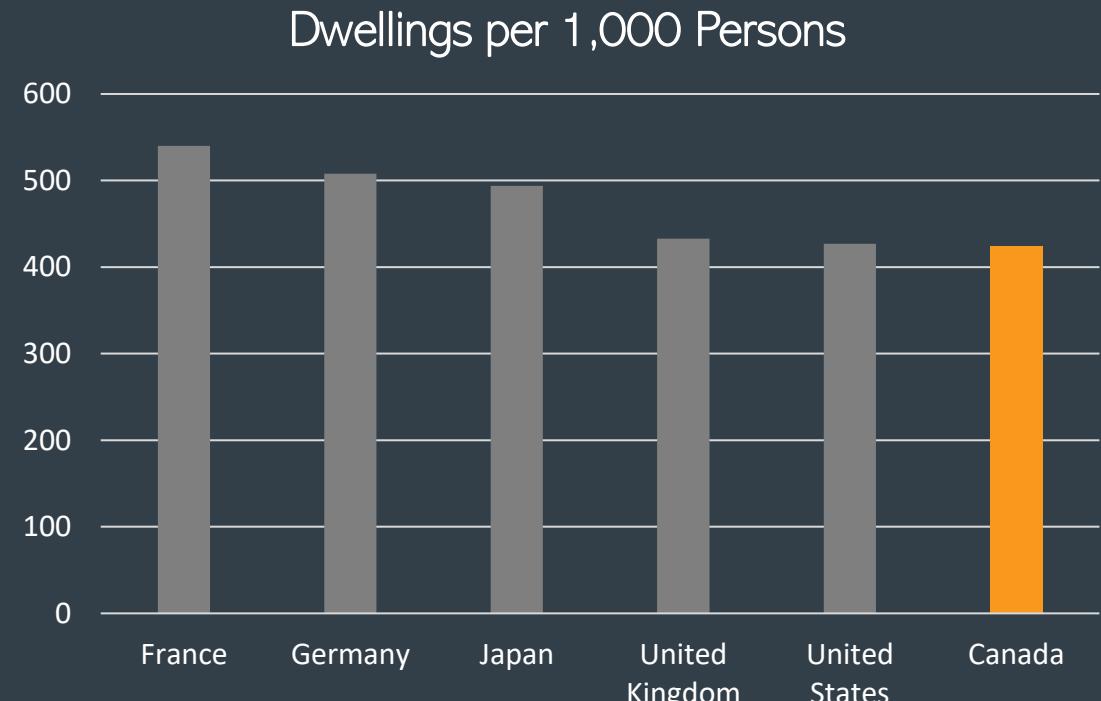
 Related products and notes

2023 G7 Population Growth

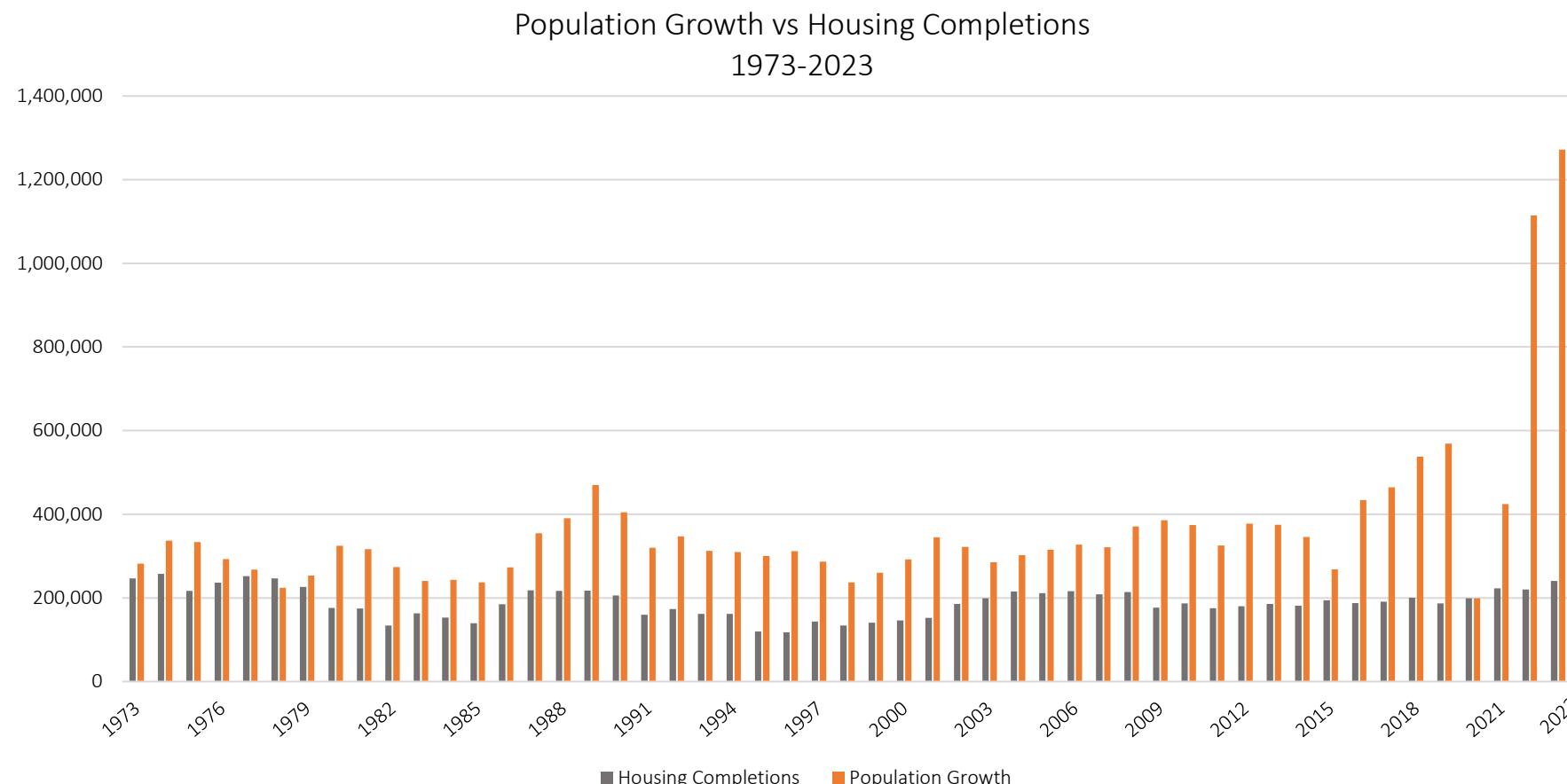


Demographics & Population Growth

- Among the G7, Canada has the lowest average housing supply per capita at 424 units per 1000 residents¹
- 1.5MM – 2MM additional dwellings to bring Canada to G7 average²
- The Government of Canada *2024-2026 Immigration Levels Plan* will add ~1.5 million new residents over the next 3 years³
- Canada averages ~200,000 new housing completions per year⁴
- Require an **additional** 3.5MM housing units by 2030 to “restore affordability”⁵

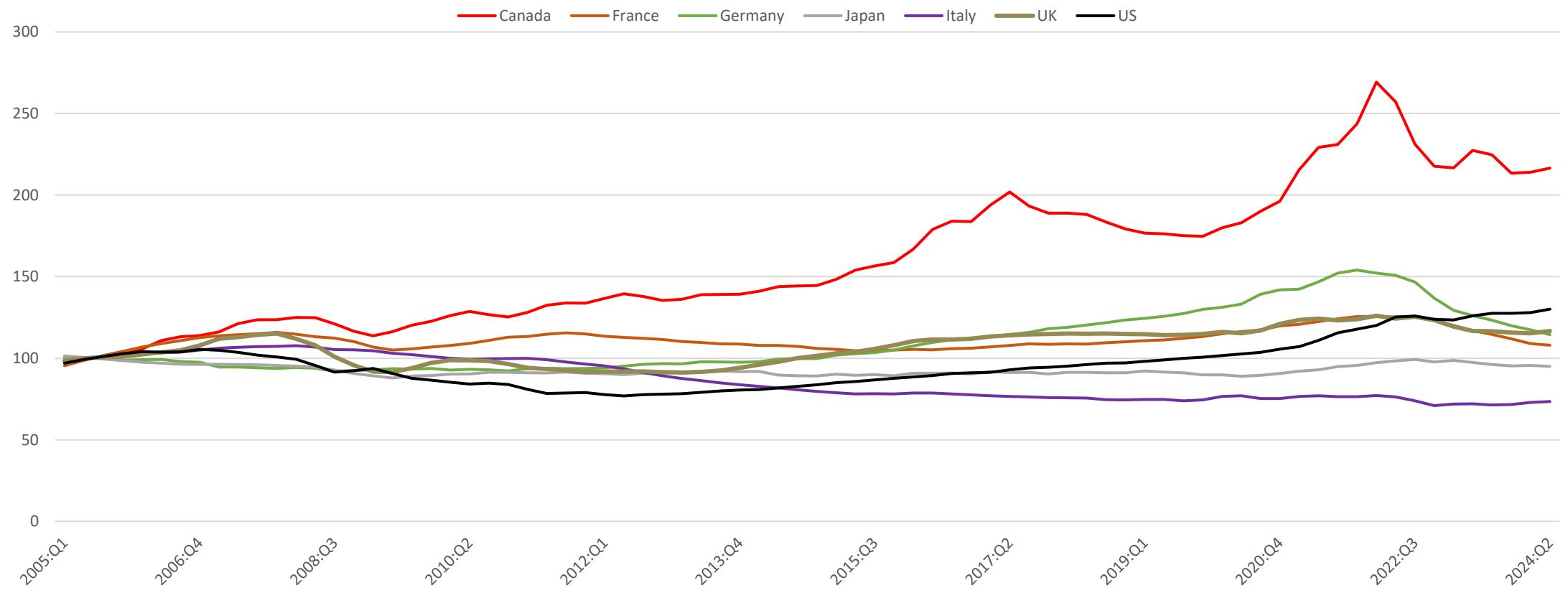


Population Growth and Housing Completions



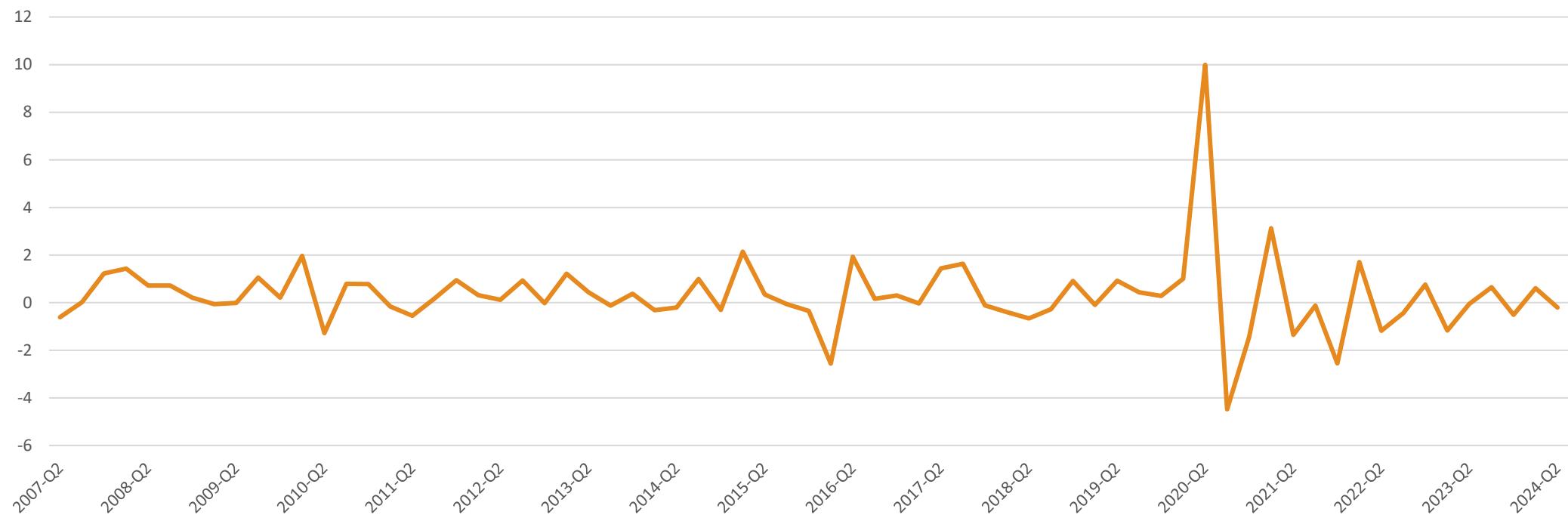
Statistics Canada. Table 17-10-0009-01 Population estimates, quarterly
Statistics Canada. Table 34-10-0126-01 Canada Mortgage and Housing Corporation, housing starts, under construction and completions, all areas, annual

Real House Price Index



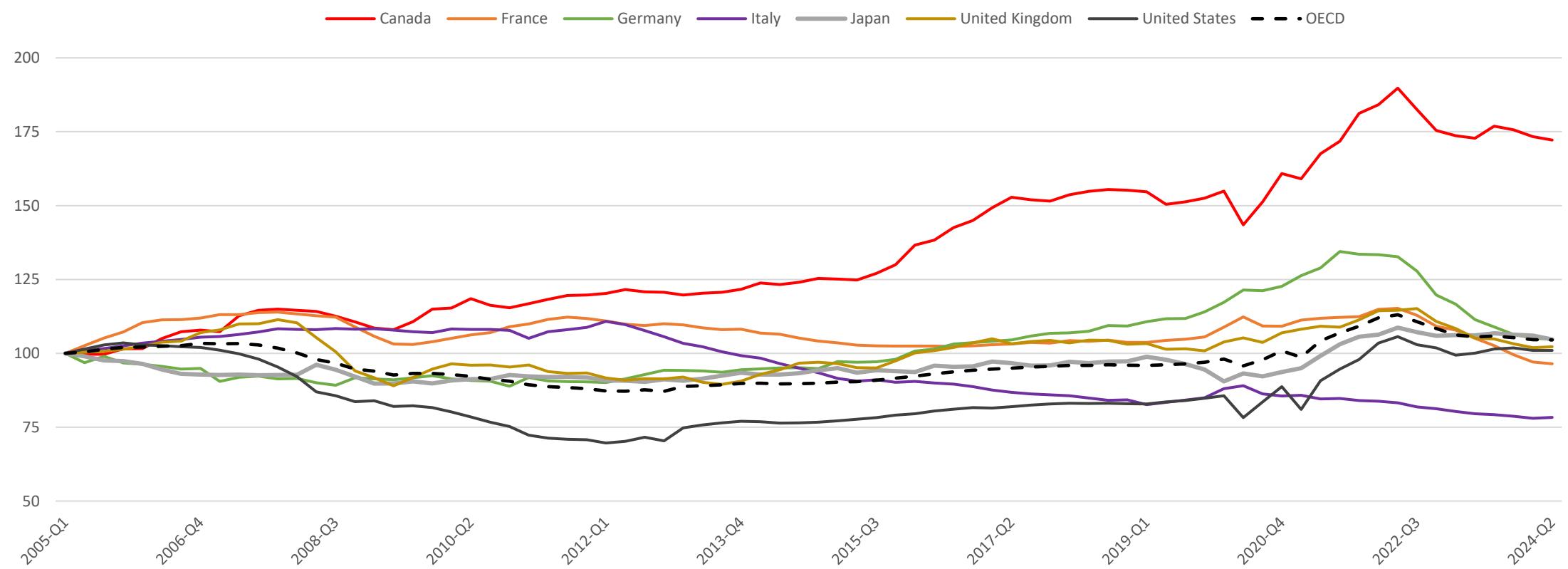
Source: Dallas Fed <https://www.dallasfed.org/research/international/houseprice>, Period covered: 2005 Q1 to 2024 Q2

Real Disposable Income Growth



Source: OECD, Real gross disposable income per capita of households, percentage change, previous period

G7 Housing Price to Income Ratio



Source: OECD, Period covered: Q1 2005 to Q2 2024; 2005 Q1 = 100

Home Price Growth

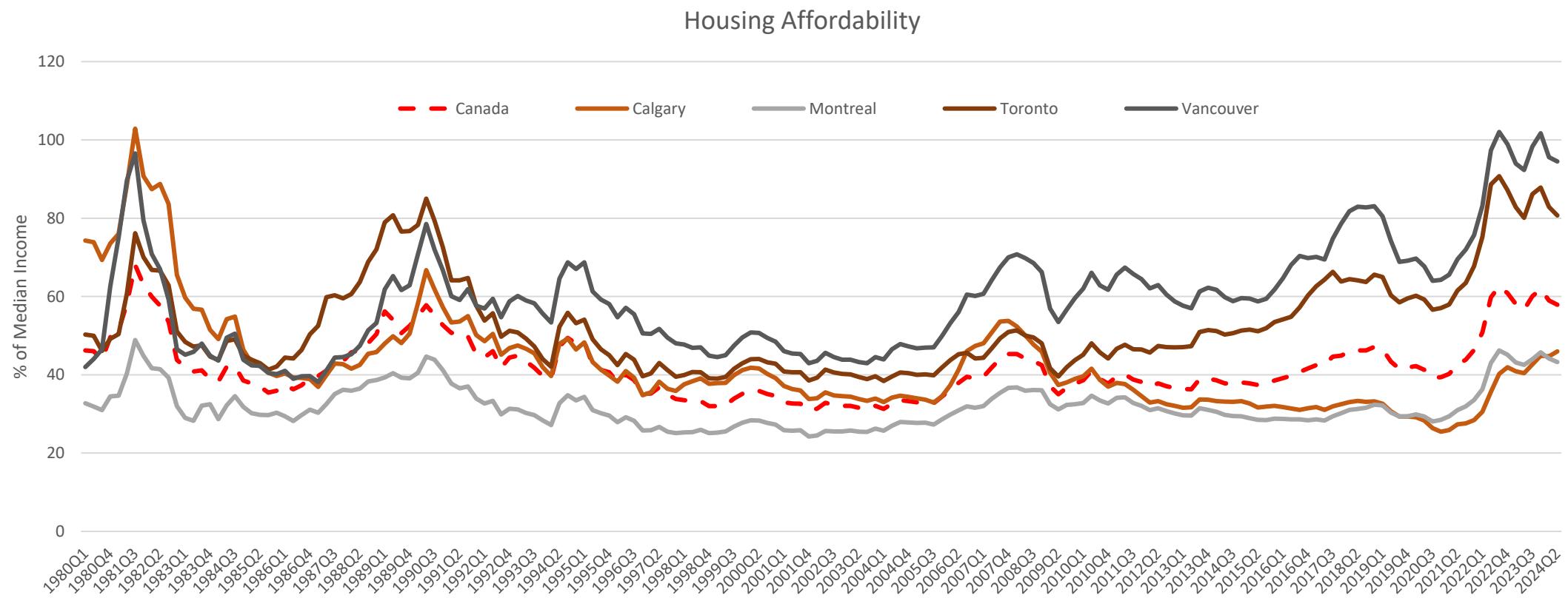
Home Price Growth in the 25 Largest Cities (by Population) in North America*
Q2 2005 - Q2 2024

Metro Area	Home Price 2005	Home Price 2024	Price Change 2005- 2024
Toronto	\$266K	\$812K	205%
Vancouver	\$302K	\$882K	192%
Montreal	\$156K	\$393K	153%
Dallas	\$150K	\$377K	151%
Mexico City	\$92K	\$215K	133%
Seattle	\$331K	\$749K	126%
Houston	\$146K	\$309K	111%
Atlanta	\$183K	\$384K	110%
Monterrey	\$46K	\$96K	107%
Puebla	\$46K	\$92K	103%

*Top 10 Metros by % Change
Source: US – Zillow Housing Data
CA – CREA, MLS, HPI
MX – mexiconews.com
FX – Federal Reserve
Prices in USD



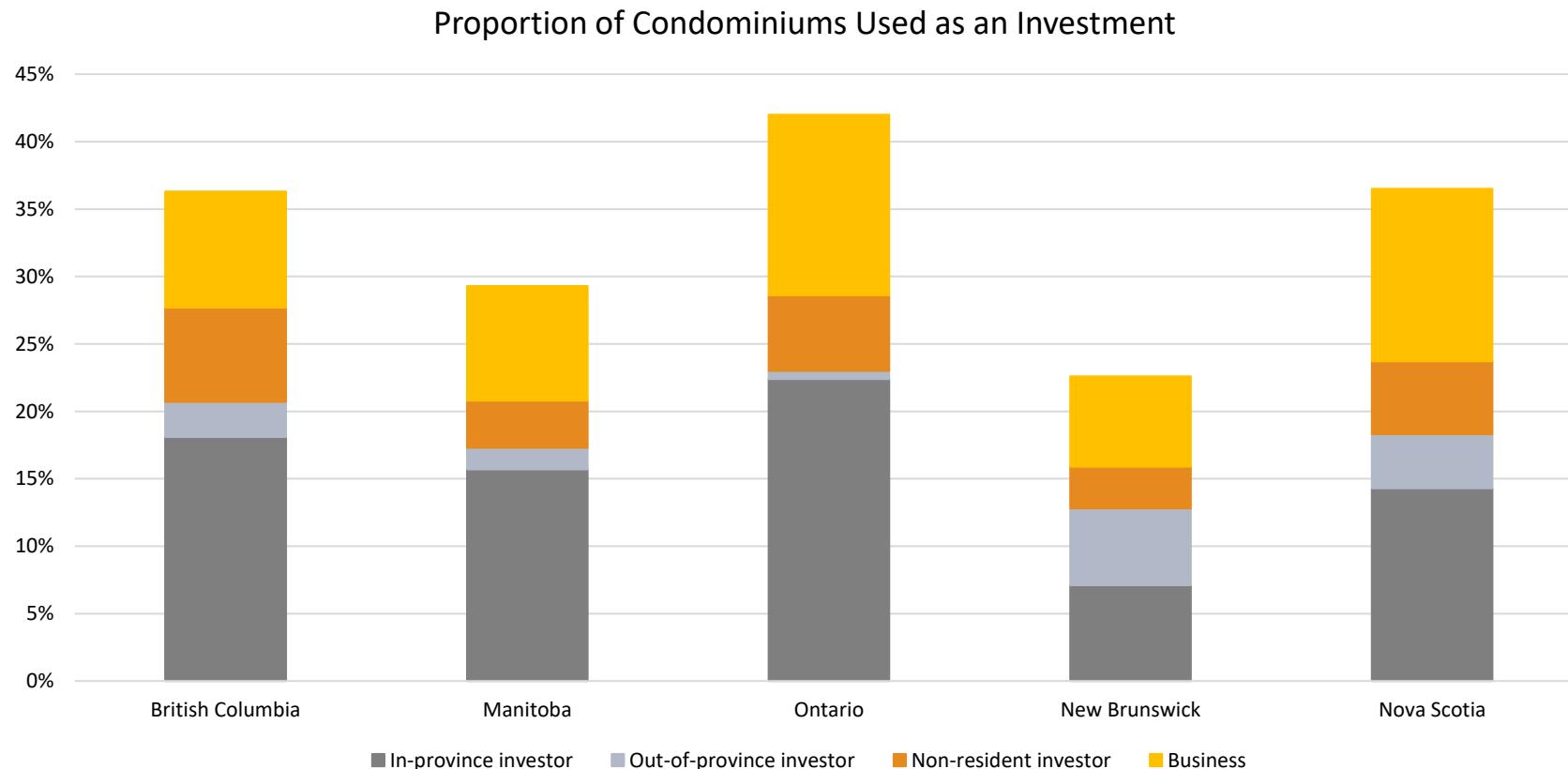
Canadian Affordability



Source: National Bank Financial Markets

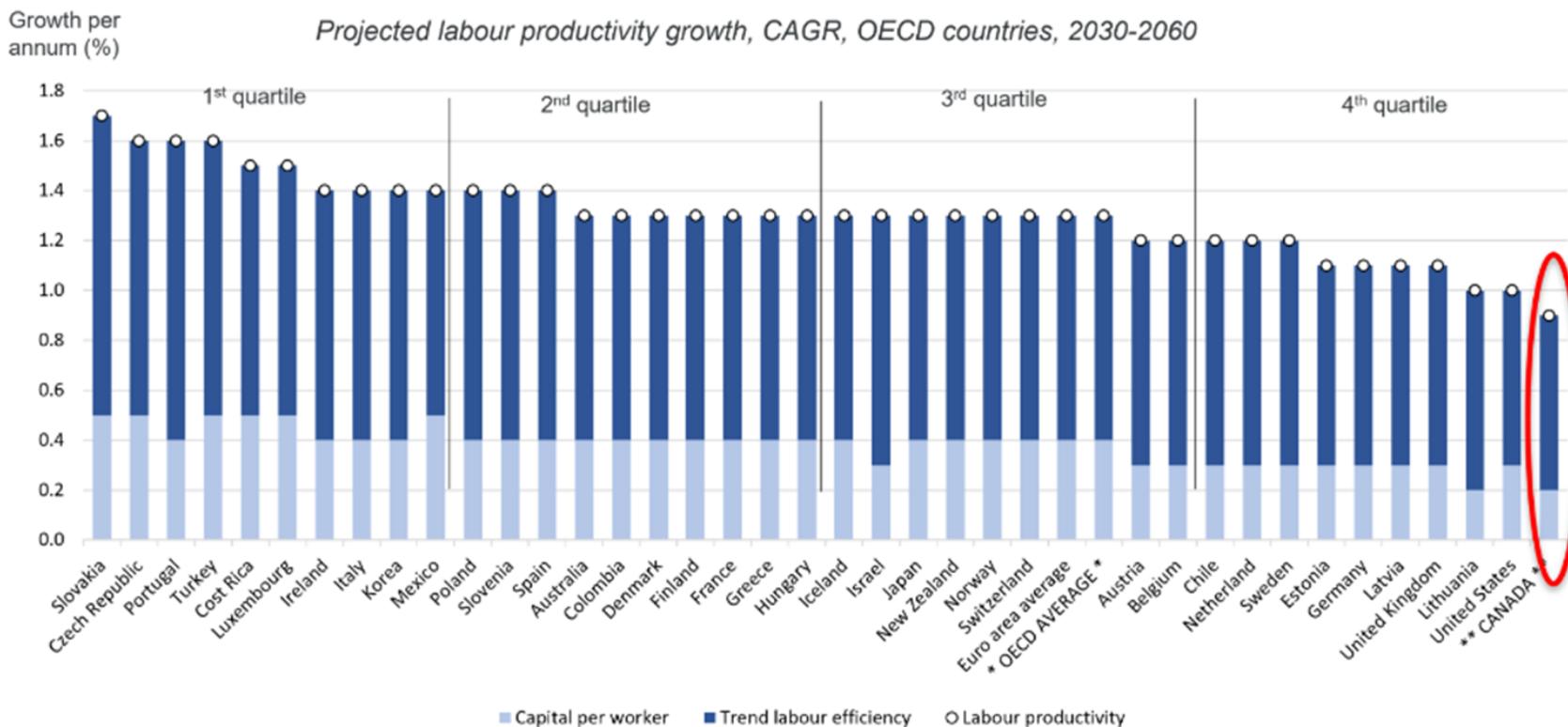
* 25-Year Amortization, 5-Year Term

Condominium Builds as Investments



Canadian Productivity

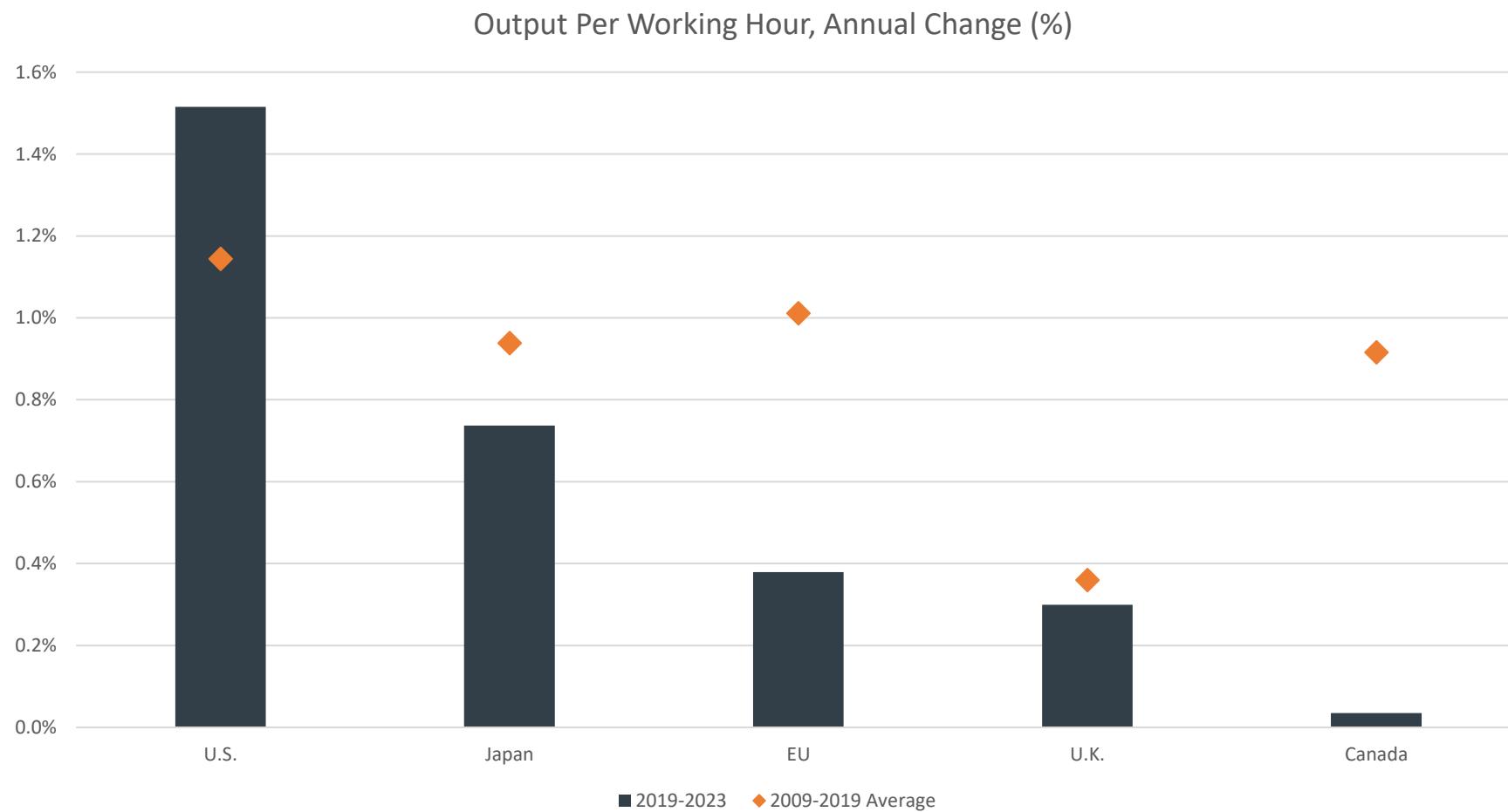
OECD PREDICTS CANADA'S PRODUCTIVITY GROWTH OVER 2030-60 WILL BE LOWEST AMONG ADVANCED COUNTRIES



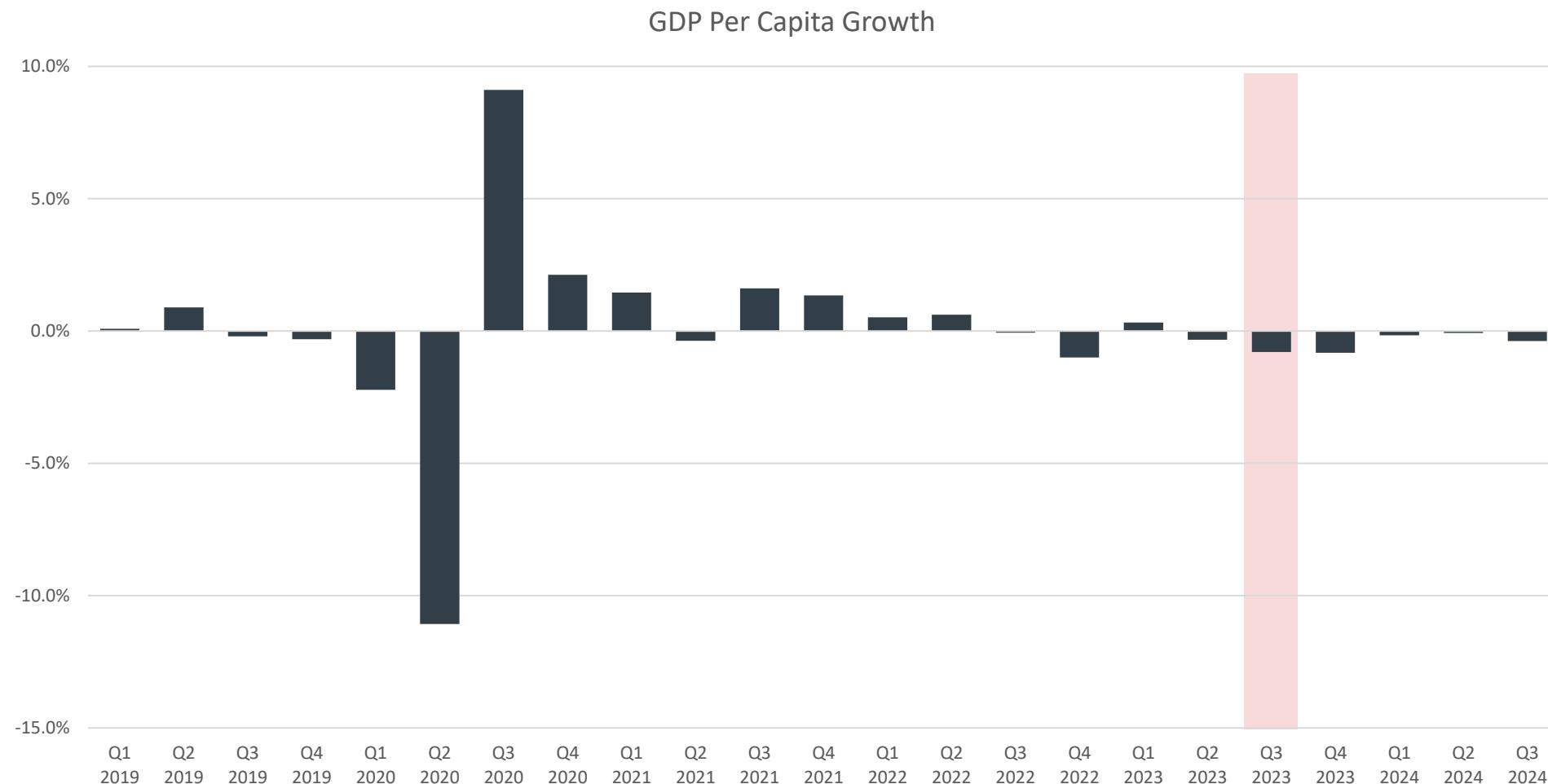
Source: OECD

Labour Productivity = Real GDP produced by an hour of labour

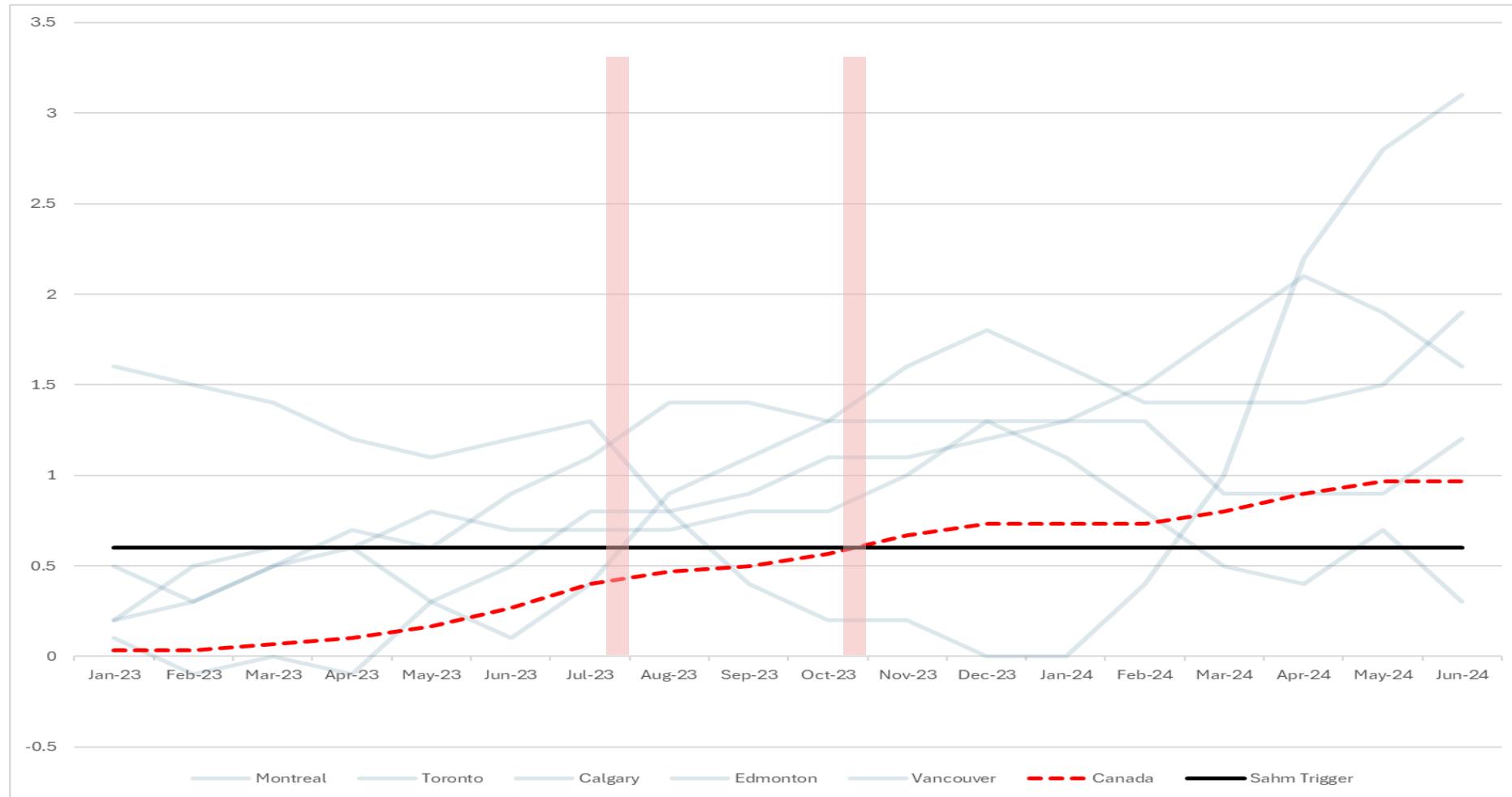
Productivity By The Numbers



GDP Per Capita Recession



A Sahm by Any Other Name



The Pandemic



The Pandemic

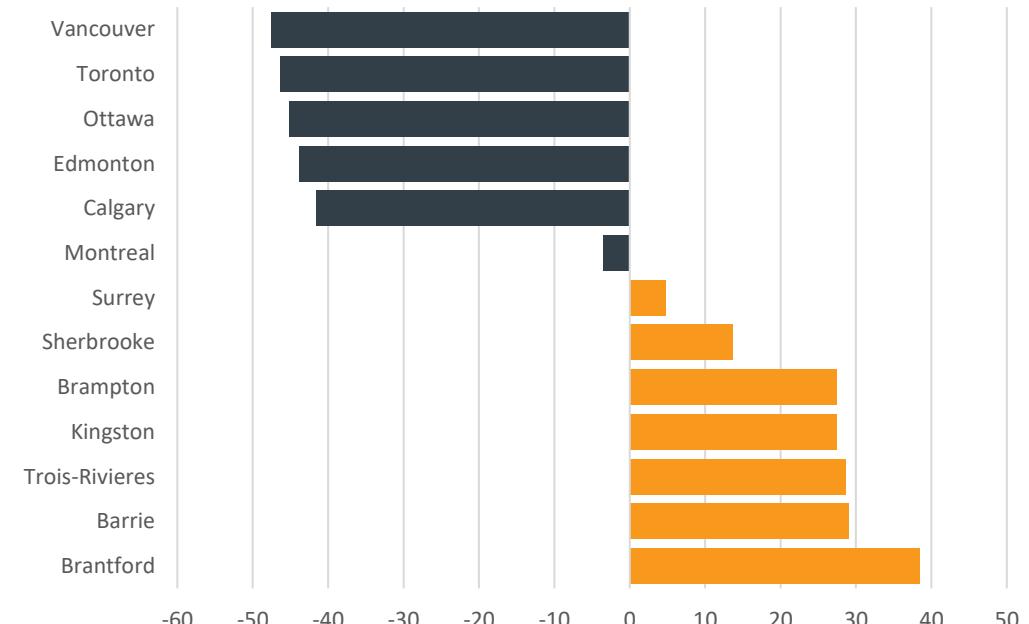
January 25, 2020

The first presumptive COVID-19 case in Canada was admitted to Sunnybrook Health Sciences Centre in Toronto

May 9, 2022

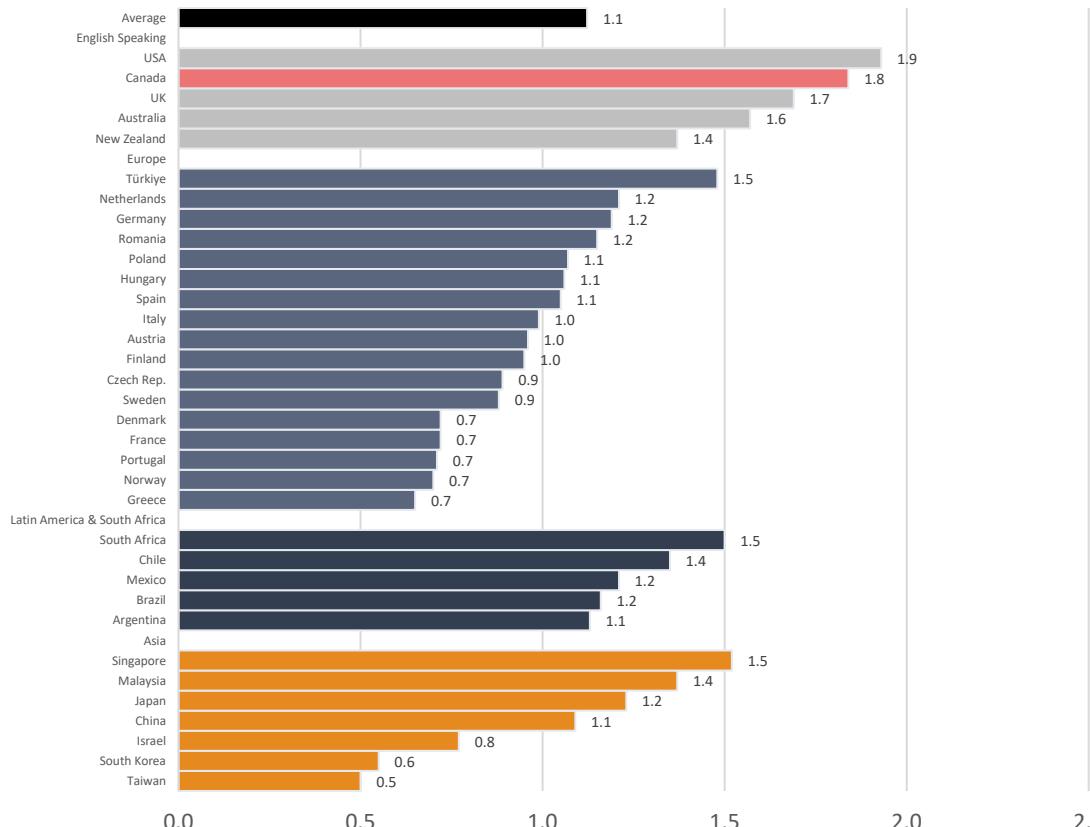
Mayor John Tory announces the termination of Toronto's COVID-19 state of emergency after being in effect for 777 days

Downtown Foot Traffic

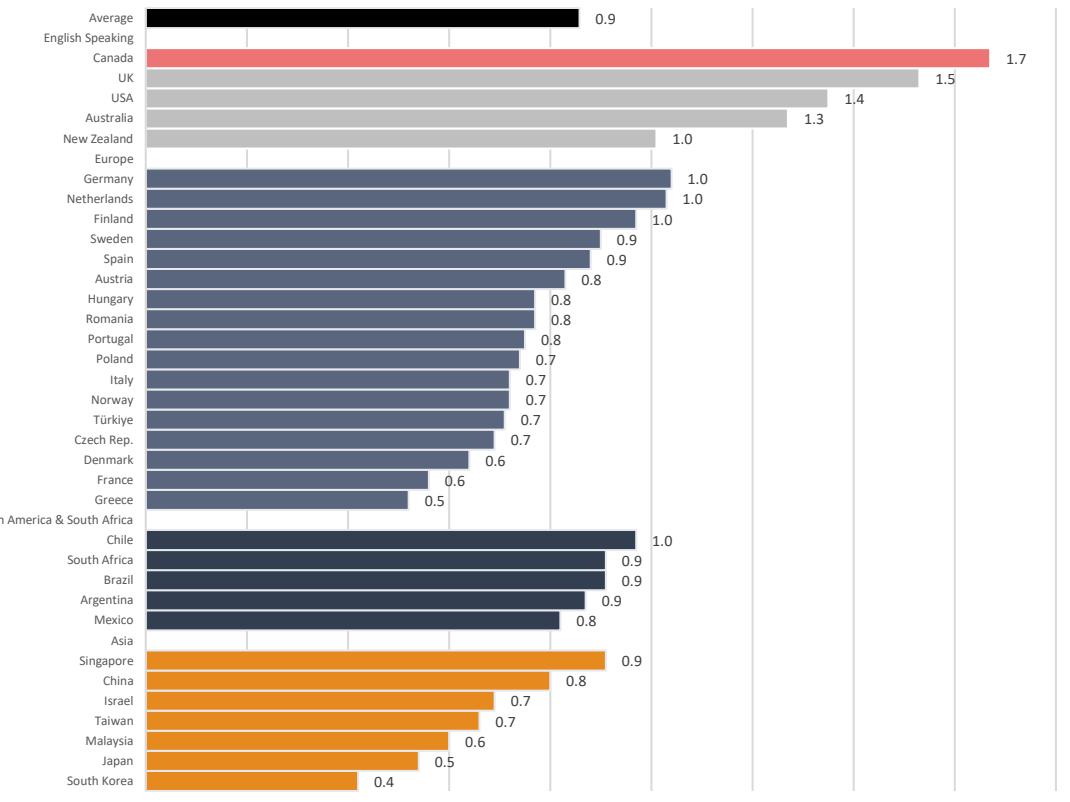


Work From Home

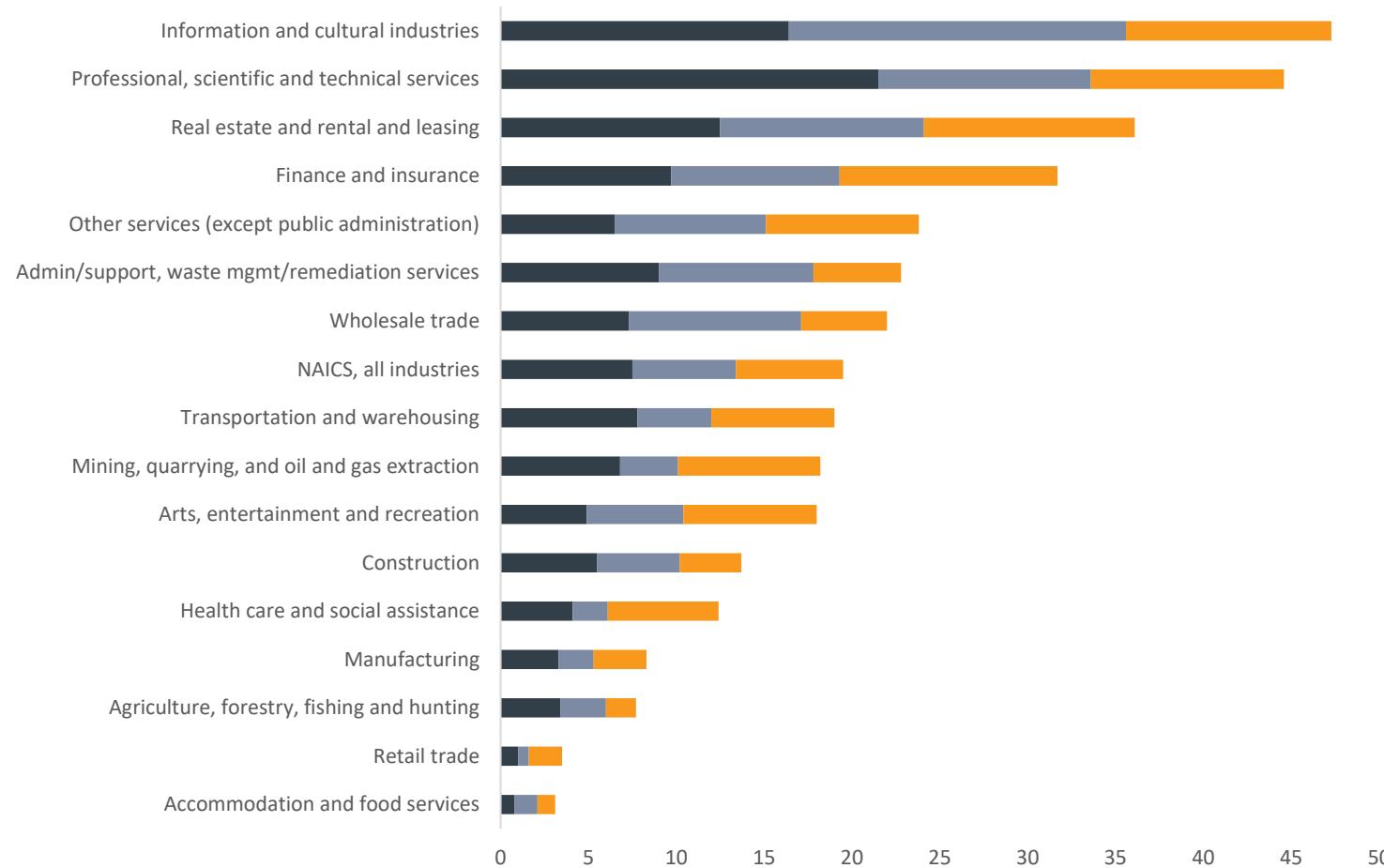
Number of employer planned full workdays at home



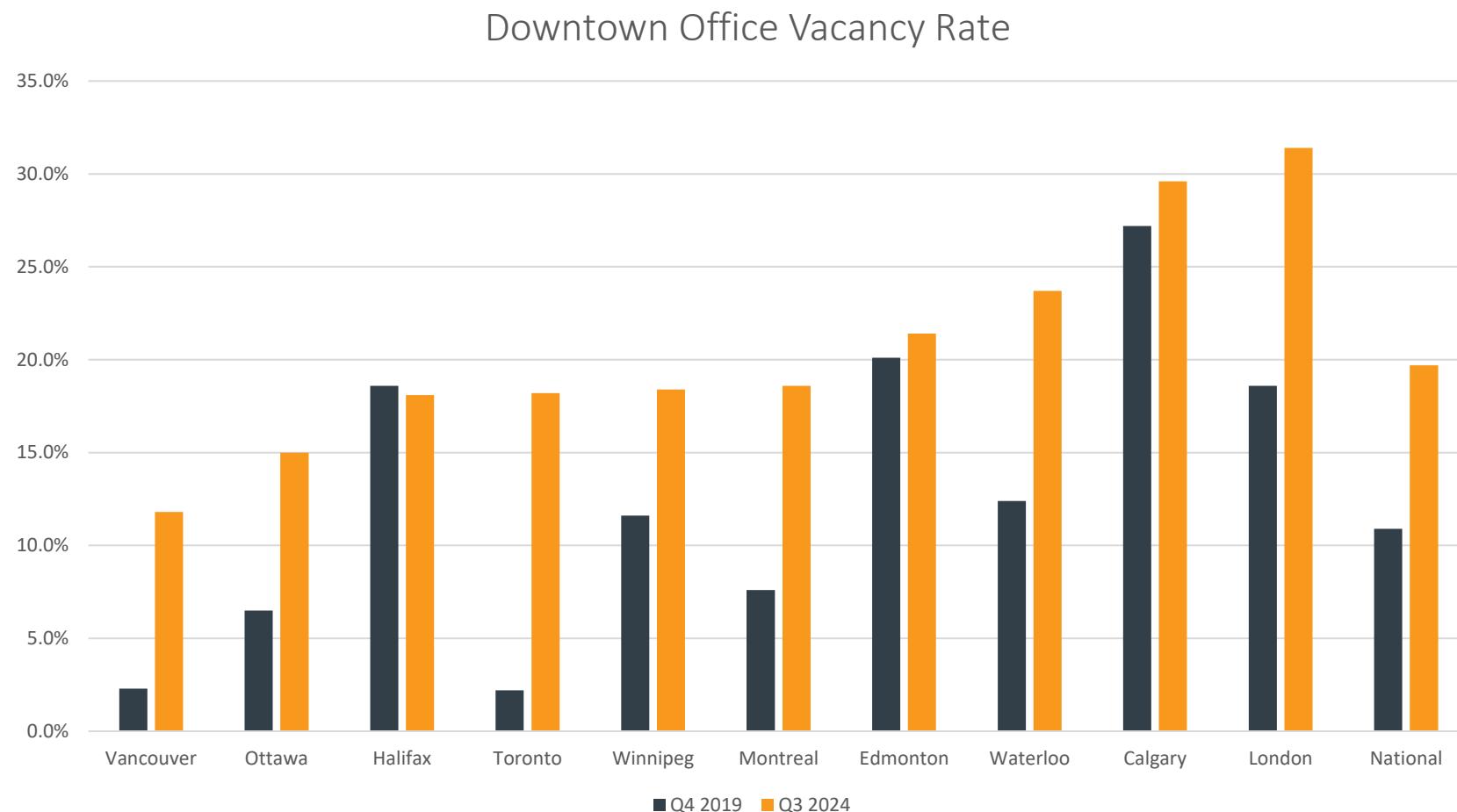
Number of days working from home per week



Work From Home - Canada

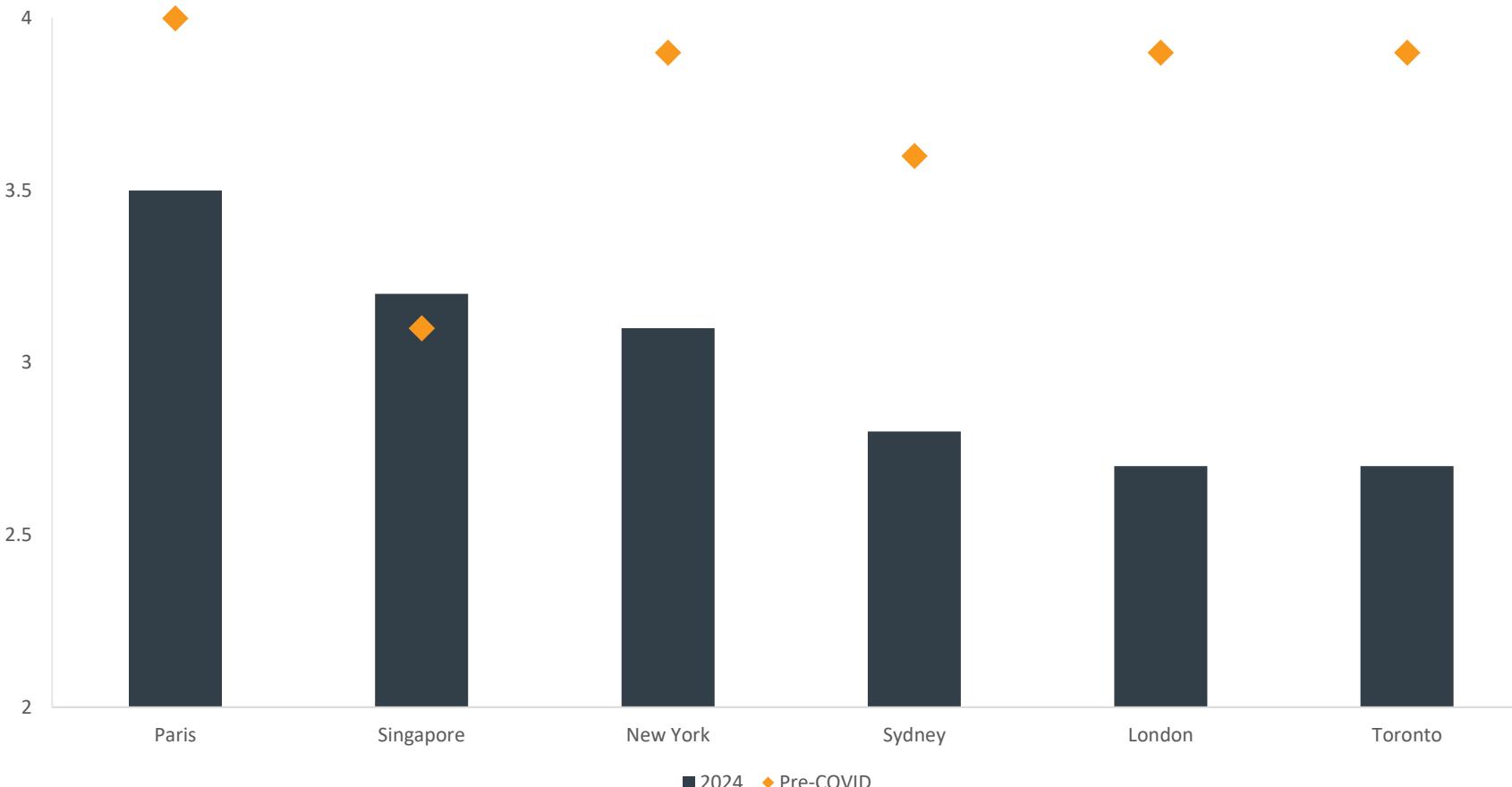


WFH and Office Vacancy



Will It Stick?

Average Days in Office
Full Time City Centre Workers



Source: Centre for Cities, 2024

Affordability + WFH = Donut?

RLB CRANE INDEX



	July 2019	Q1 2020	Q3 2020	Q1 2021	Q3 2021	Q1 2022	Q3 2022	Q1 2023	Q3 2023	Q1 2024	Q3 2024
Boston	14	13	12	13	12	9	10	9	20	14	9
Calgary	34	37	34	35	32	31	21	20	19	20	24
Chicago	27	29	14	12	7	10	18	14	9	3	4
Denver	18	25	18	22	15	21	32	36	24	14	13
Honolulu	4	9	8	10	6	6	9	14	12	12	14
Las Vegas	25	17	4	2	2	2	3	12	9	10	11
Los Angeles	49	47	41	43	51	51	46	47	30	50	42
New York	27	26	12	10	10	12	14	10	8	5	5
Phoenix	3	9	16	9	2	2	3	9	7	7	8
Portland	30	28	27	23	15	12	15	14	14	9	7
San Francisco	23	33	24	11	13	15	14	17	11	8	6
Seattle	49	36	43	43	39	37	42	51	45	38	28
Toronto	120	121	124	208	225	252	230	238	240	221	83
Washington DC	28	25	38	45	35	26	26	26	18	12	13

Note: Crane counts released in July are collected in May; crane counts released in January are collected in November.

Beginning in 2020, crane counts are now conducted on a bi-quarterly basis; referenced as Q1 (collected in February) and Q3 (collected in August).

Las Vegas was added to the Crane Index in Q1 2020.

Parameters for New York City were expanded in Q1 2021.

The Response



Bank of Canada
Monetary Policy



Canada's Housing Plan

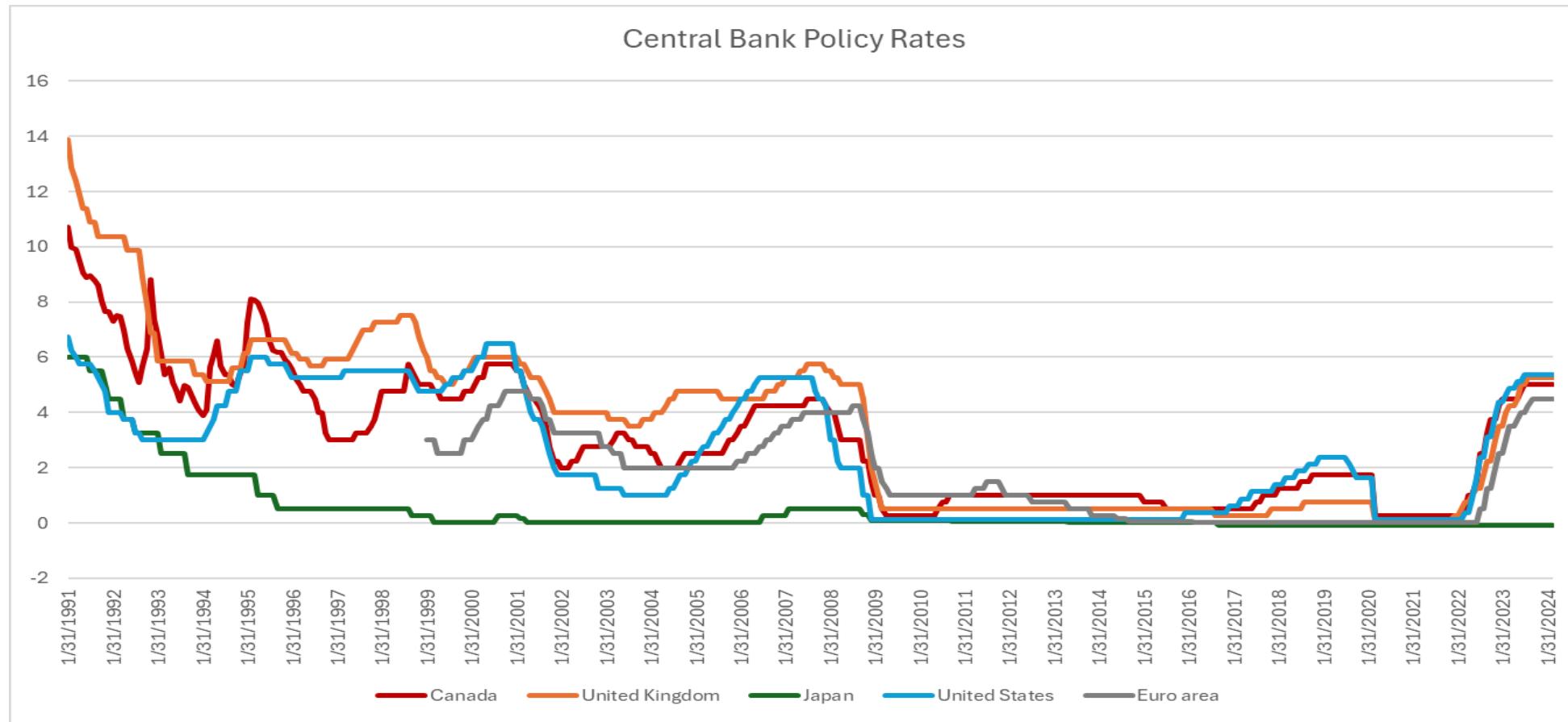


The Canadian
Mortgage Charter

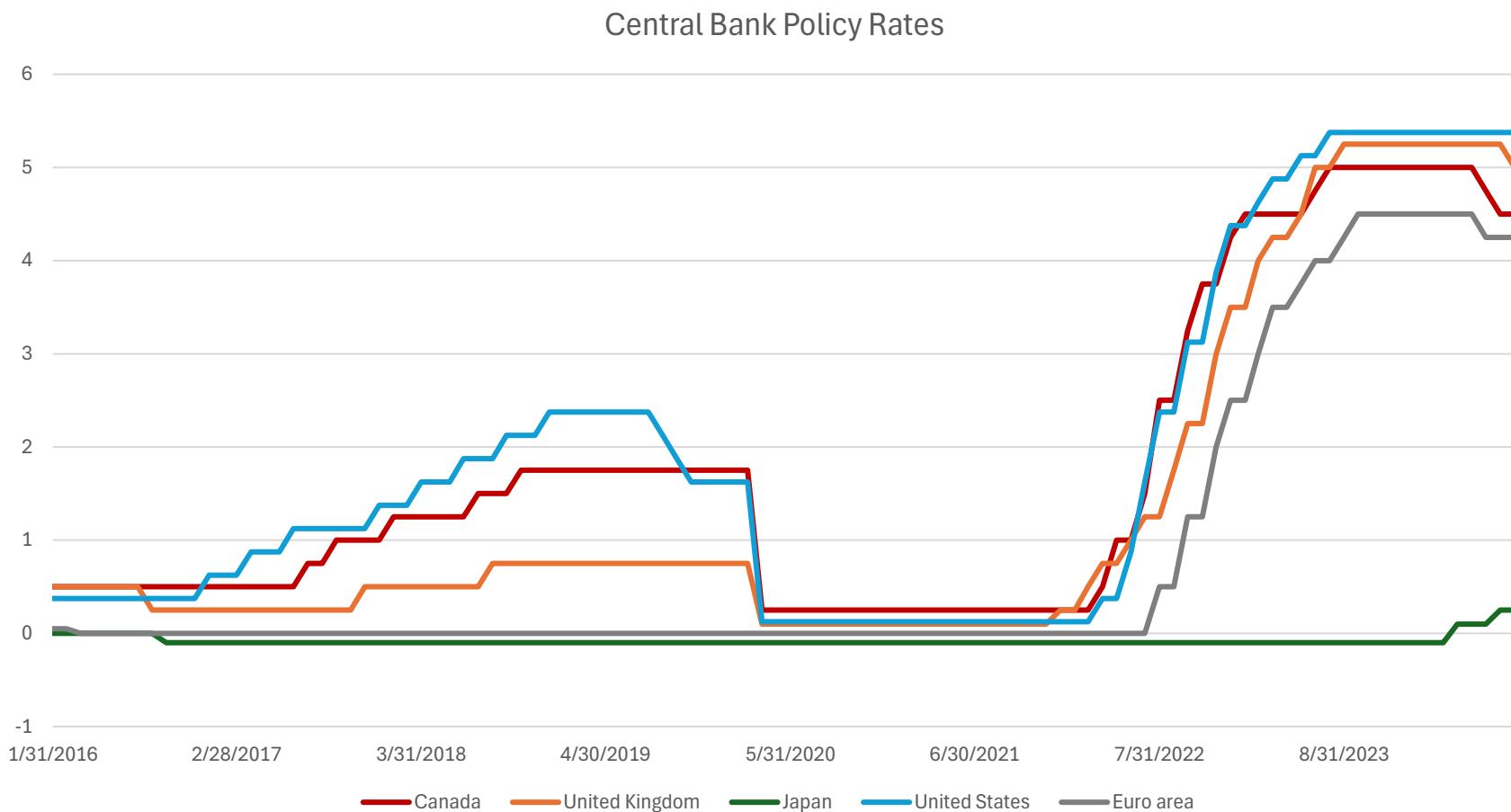


Gish Gallop

G7 Monetary Policy



G7 Monetary Policy



Solving the Crisis

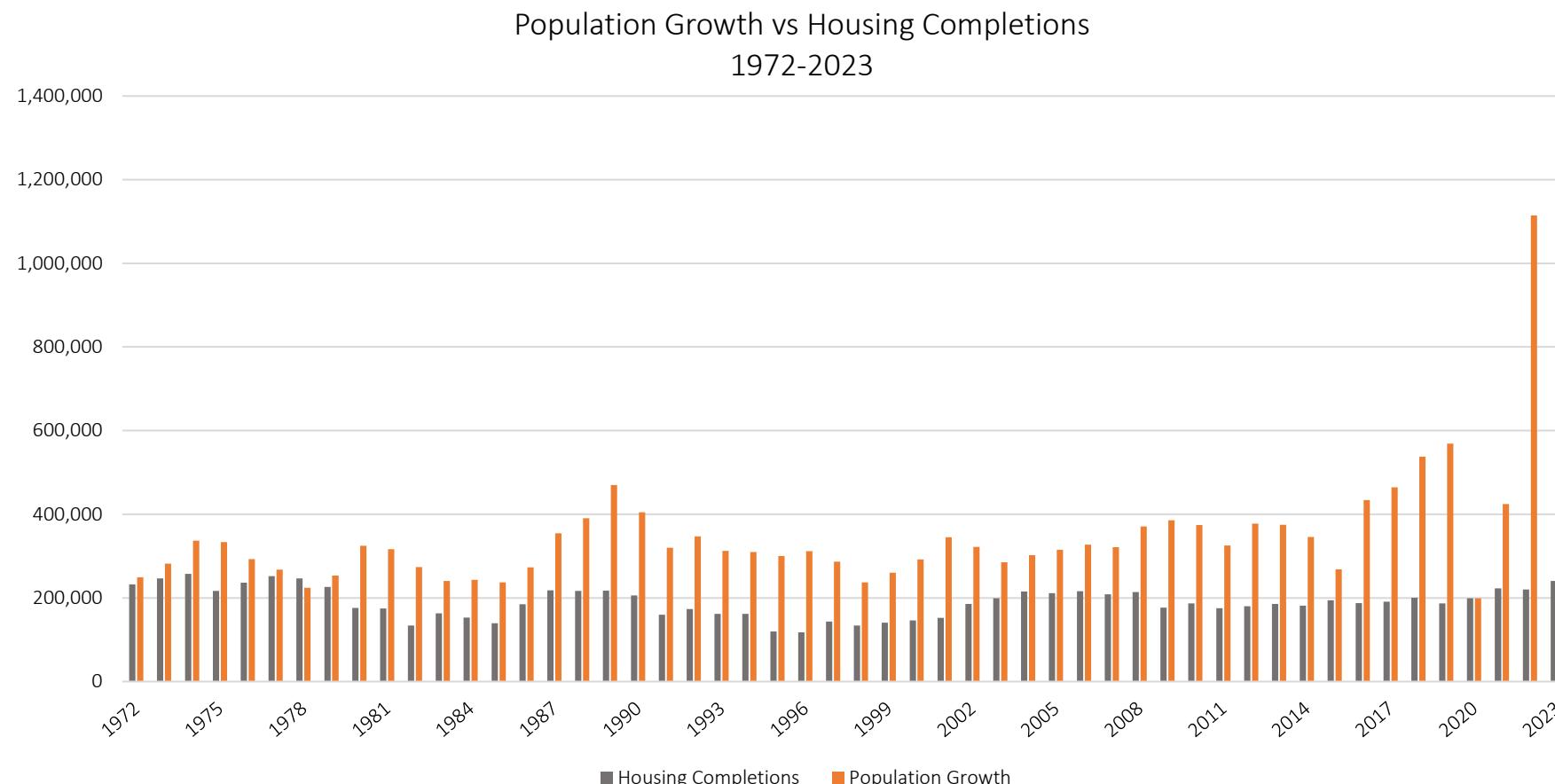
- Released on April 12, 2024
- A commitment to make housing affordable
- “Unlock” 3.87 million new homes by 2031
 - Building more homes
 - Making it easier to **rent** or own a home
 - Helping Canadians who can’t afford a home

**SOLVING THE
HOUSING CRISIS**

**CANADA’S
HOUSING PLAN**



Population Growth and Housing Completions



Canadian Mortgage Charter

- Unveiled in the Government's Fall Economic Statement
- Builds on "existing guidance and expectations" regarding how financial institutions are expected to engage borrowers
- Six Guidelines – **Not law**
- Updated - September 16, 2024

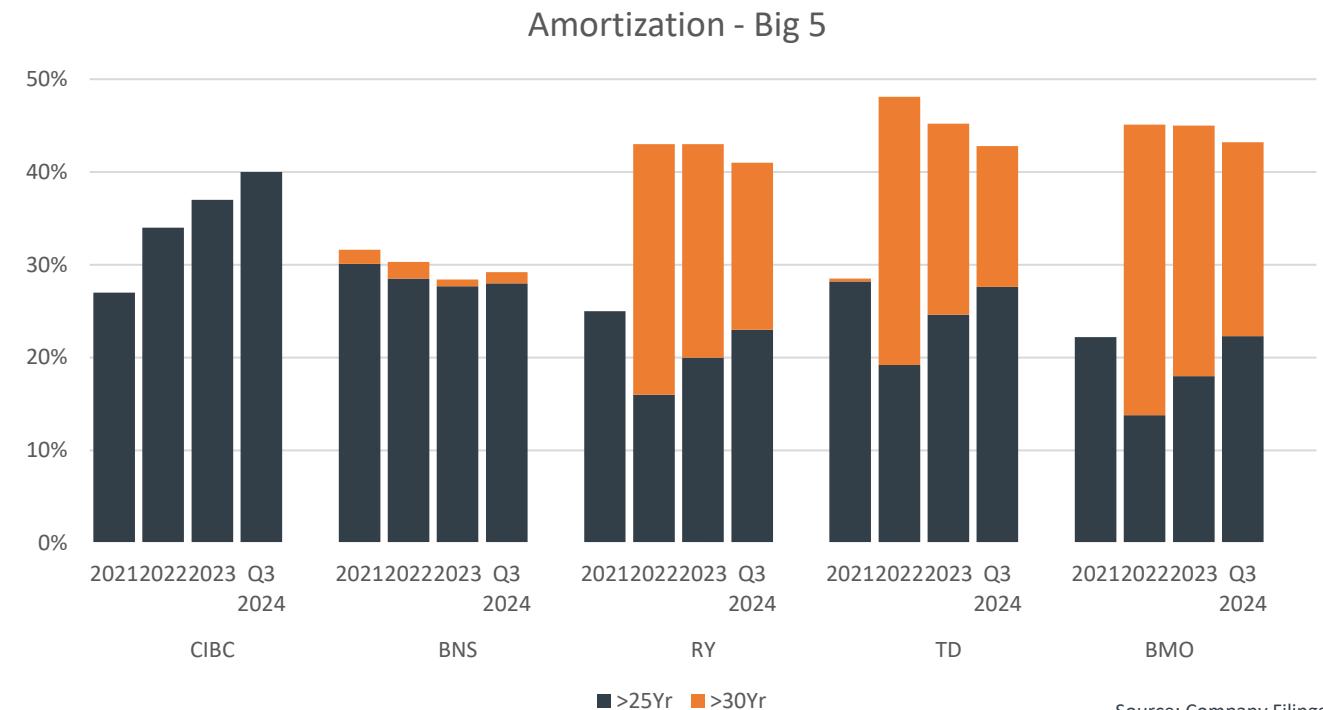
"Government announces boldest mortgage reforms in decades to unlock homeownership for more Canadians"

- Moral Suasion or...

Moral Hazard *noun*
[‘môr-əl ‘ha-zərd]

def:

Lack of incentive to guard against risk where one is protected from its consequences



Source: Company Filings

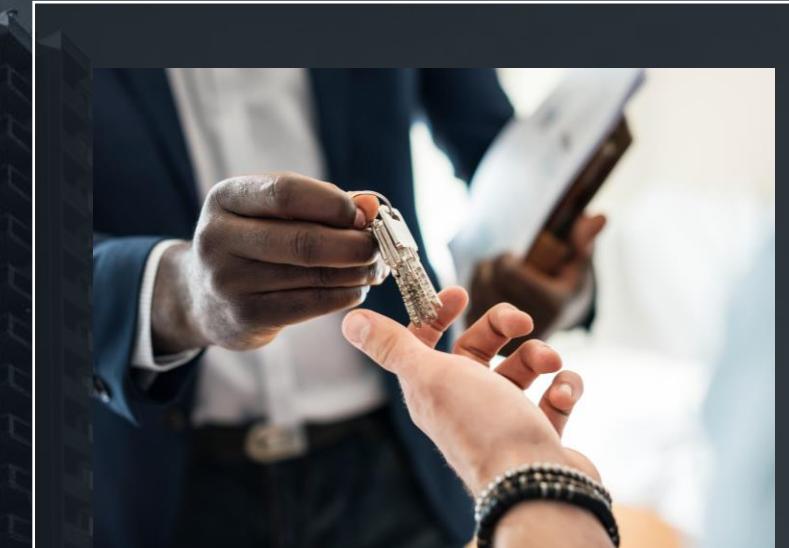
Consequences



The Canadian housing supply/demand issue creates a favorable investment opportunity



Supply and demand dynamics continue to put upward pressure on rental costs

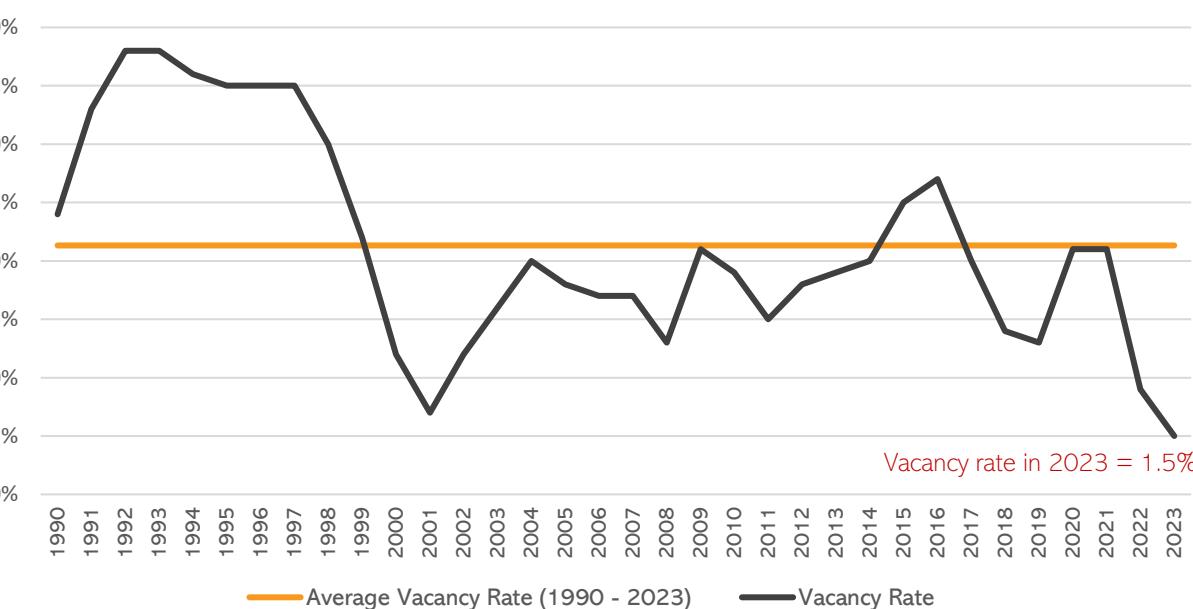


Rental market will have a robust demand in the future

Rise of the Rental Market

Lowest rental vacancy rate since 2001

Purpose-Built Rental Apartment Vacancy Rates

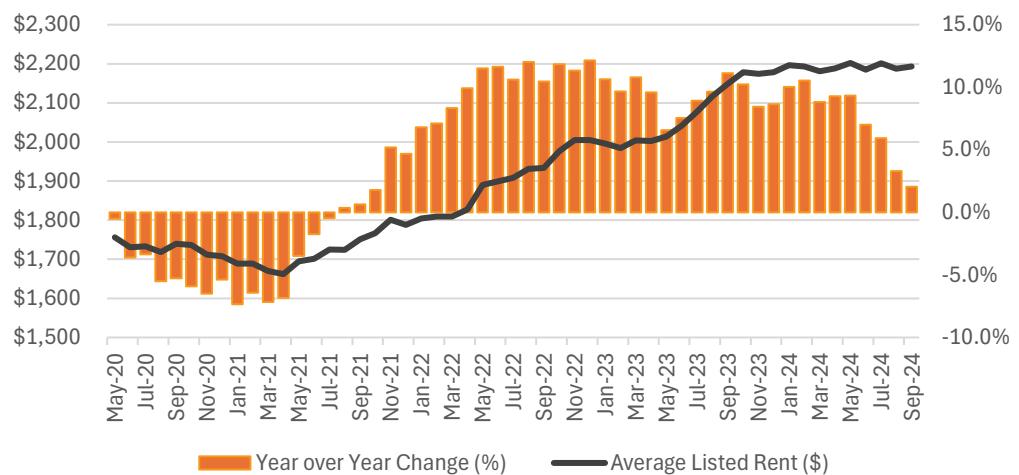


Source CMHC

Note: Canada total includes all centers of 10,000+ population

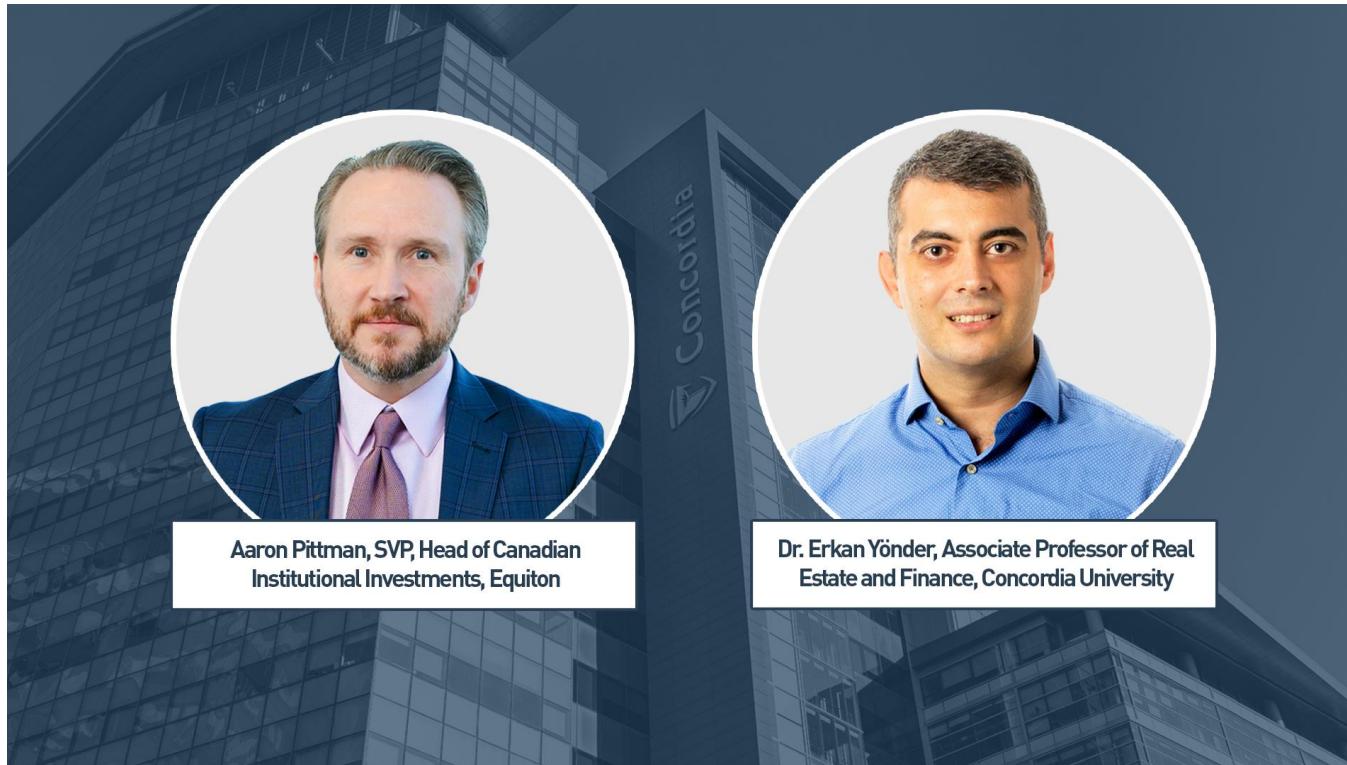
For the first time average rents over 2k in 2022

Average Listed Rent and Annual Growth
All Property Types, Canada



Source: Urbanation Inc. ; Rentals.ca Network Inc.

Research Partnership



Aaron Pittman, SVP, Head of Canadian
Institutional Investments, Equiton

Dr. Erkan Yönder, Associate Professor of Real
Estate and Finance, Concordia University

Equiton Research Fund in Real Estate at the John Molson School of Business

Rent Projections / Machine Learning

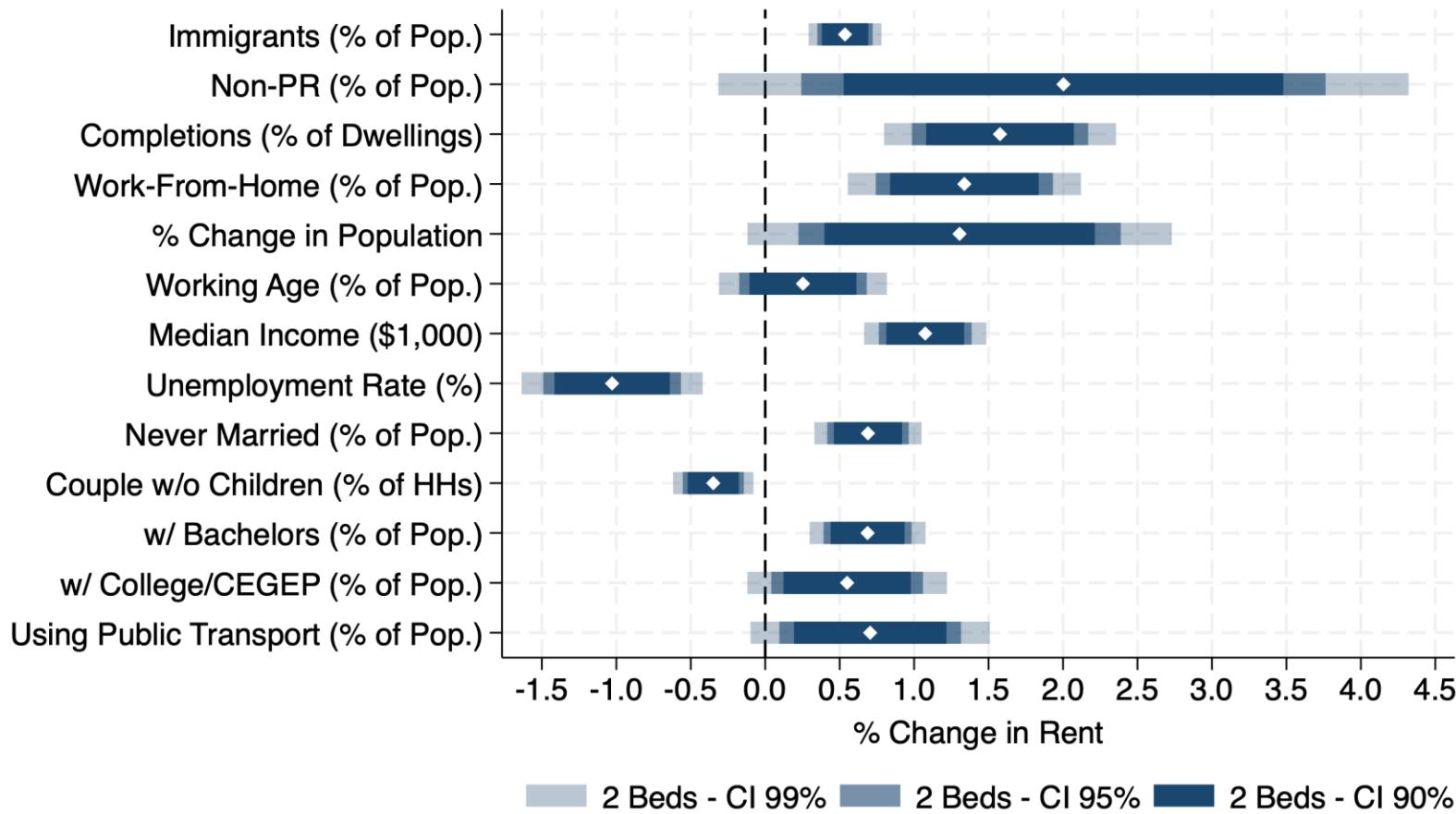
- Model incorporates total number of immigrants, non-PR residents and population growth as projected by the government until 2032
 - Factors in the approximately 20% decline in non-PR residents targeted and projected by the government from 2027 to 2032
- Projected populous geographic distribution is based on 2021 weights
- Population is adjusted by projected growth
- 2021-2023 growth used to project other determinants (such as completions)
- Neural network model utilized to project future rents

Market Indicators

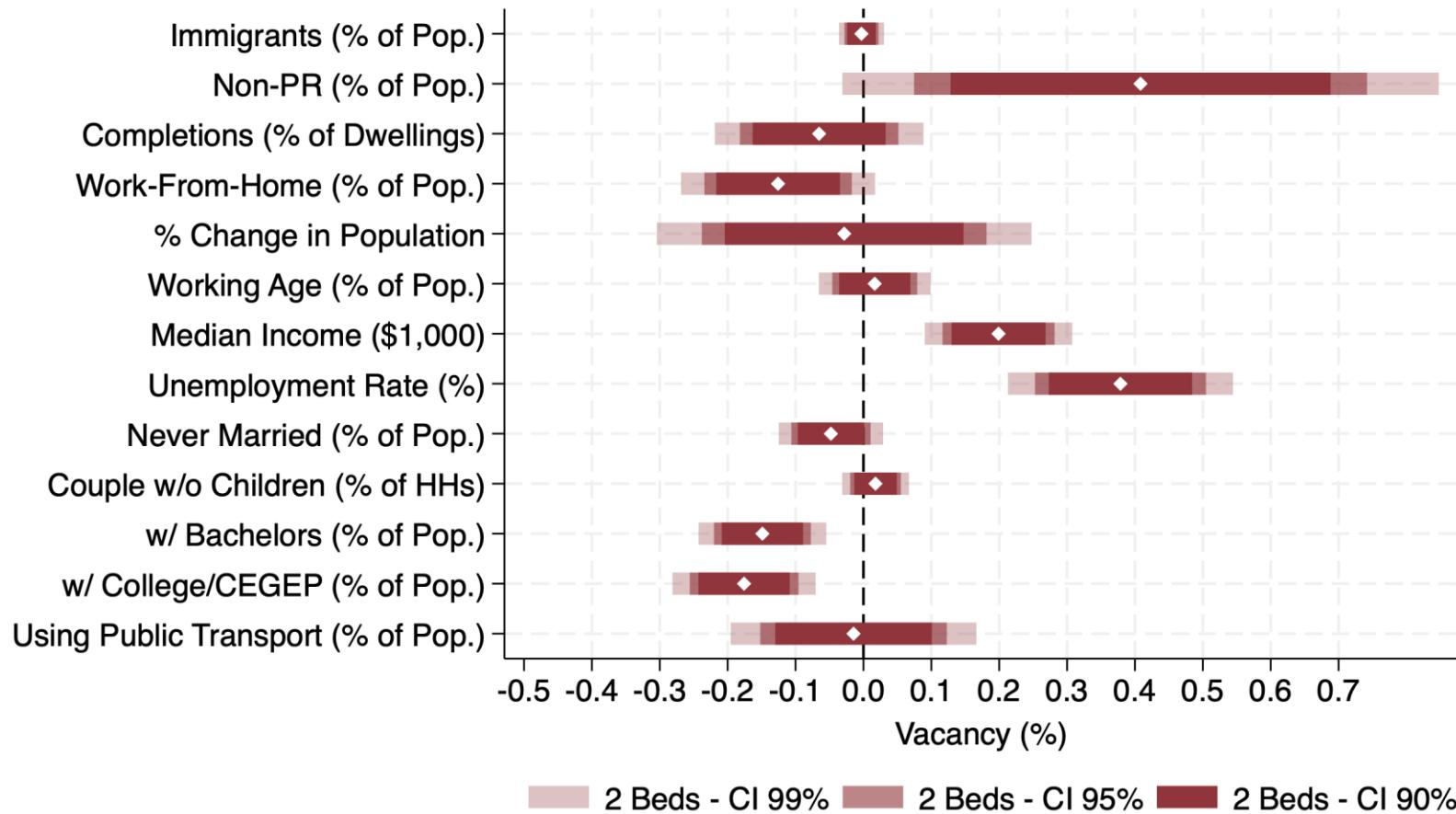
Median rents and vacancy by census subdivision

- Market Indicators by Census Subdivision obtained from CMHC
 - Median Rents
 - Vacancy
- Annual frequency from 2007 to 2023
- Factors using Census Data and Starts and Completions Survey by CMHC
- We mainly use linear regression analysis with fixed effects
 - Fixed effects capture the impact of unobservable factors by location and by year
 - Linear model helps us understand relationships and determine important factors that drive market indicators

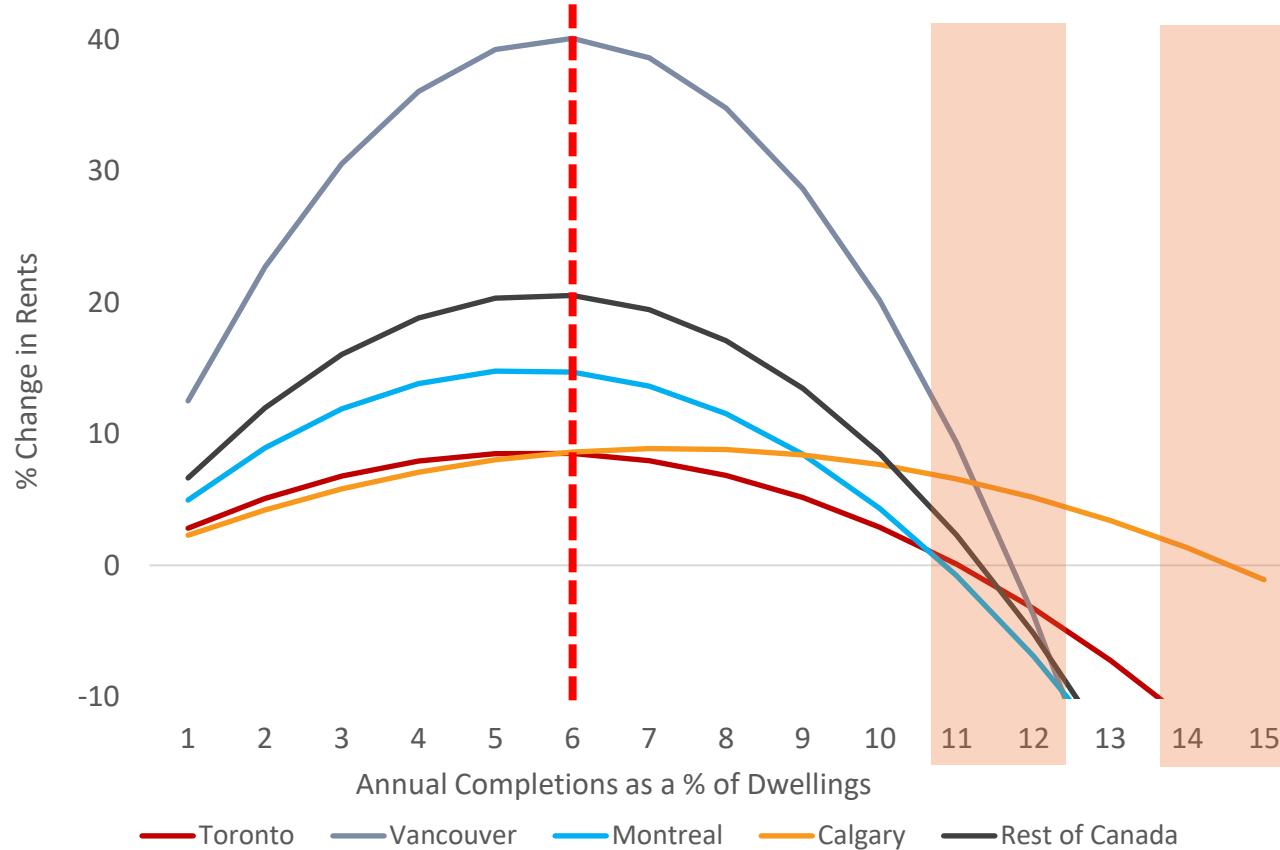
Factor Impact on Median Rents



Factor Impact on Vacancy



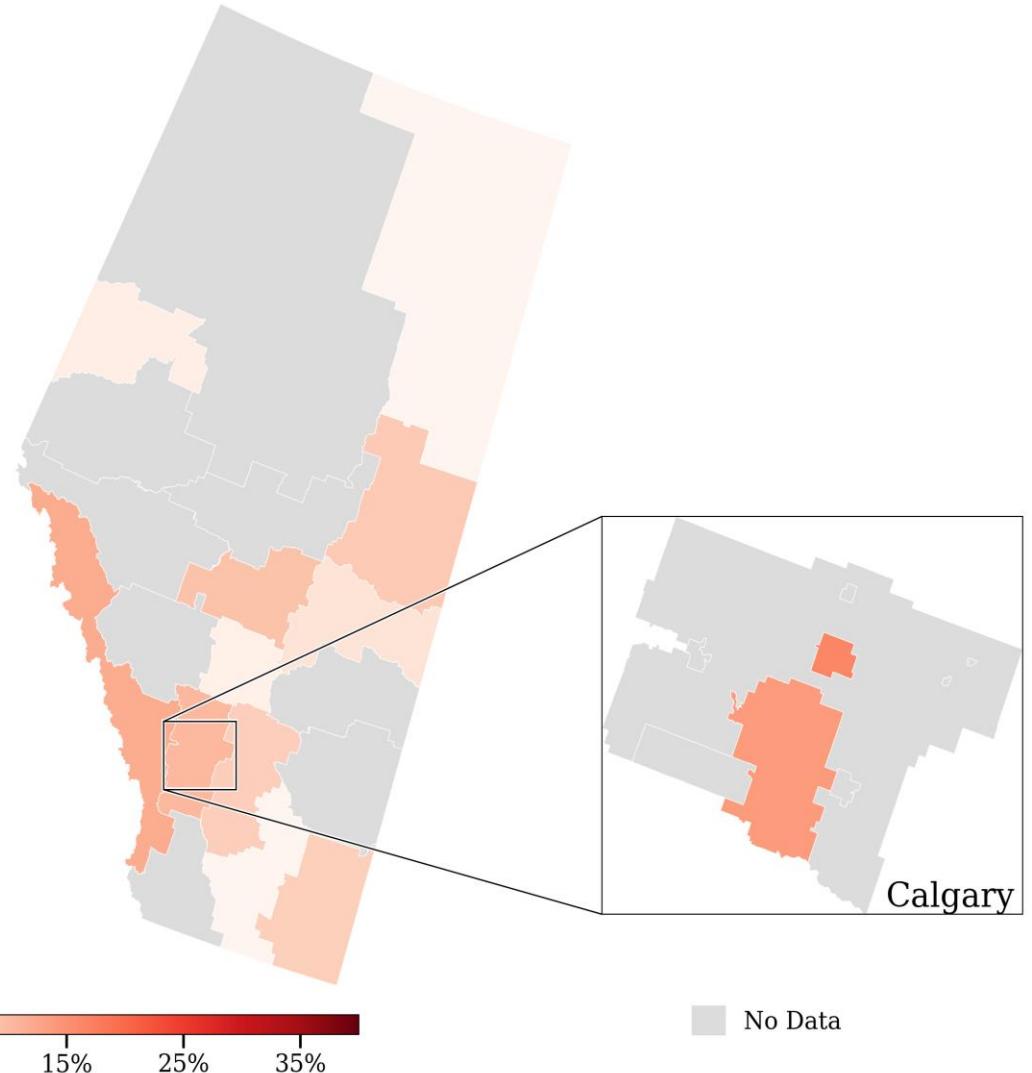
Impact of Completions in the Rental Market



- For rents to start to decline, the annual completions must reach 11-12% (14% for Calgary) annually which is approximately 10 (6) times the current annual supply increase levels in GTA (Calgary)
- Assumes ceteris paribus, i.e. no increase in the density of immigrants
- Increased immigration requires even more supply increases

Rent Projections 2023 to 2027

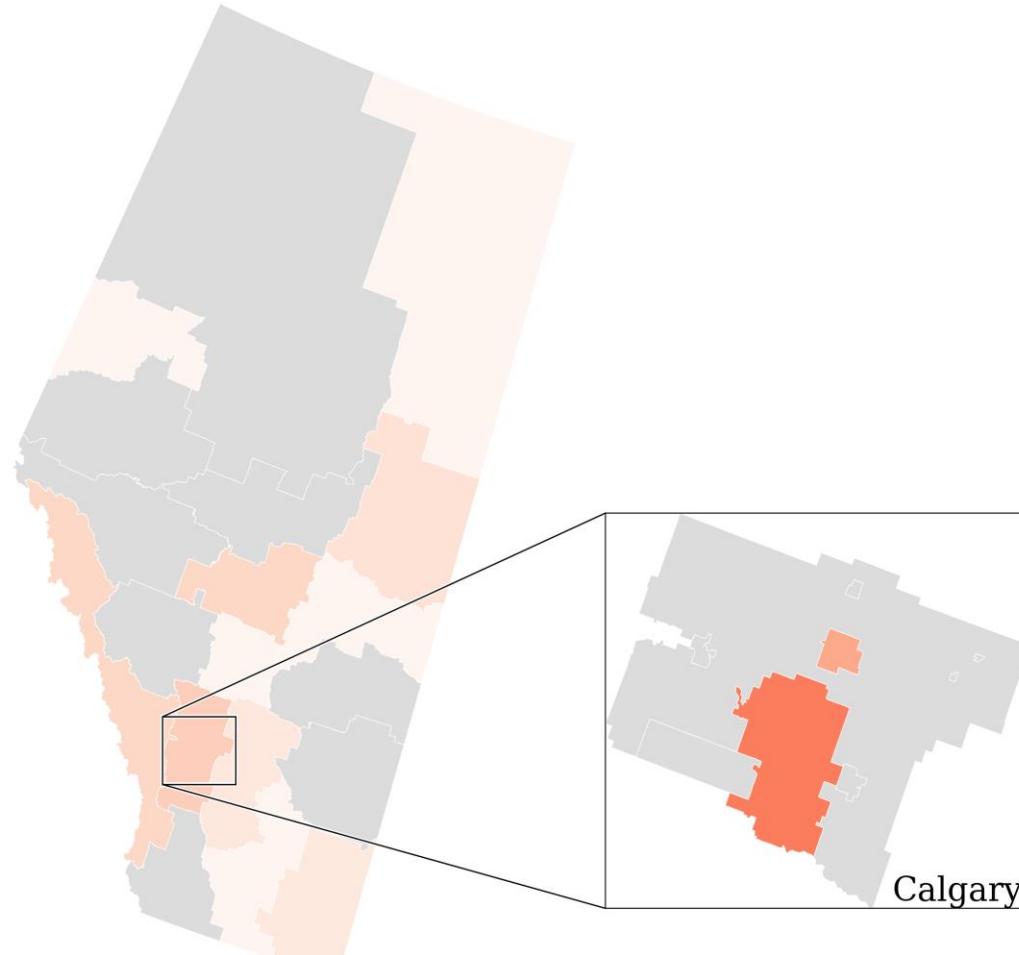
Alberta and Calgary



- The average rent in Calgary is ~\$1,900 for a two-bedroom apartment in March 2023*
- The model indicates that in Calgary, the average rent will rise to ~\$2,200 by 2027

Rent Projections 2027 to 2032

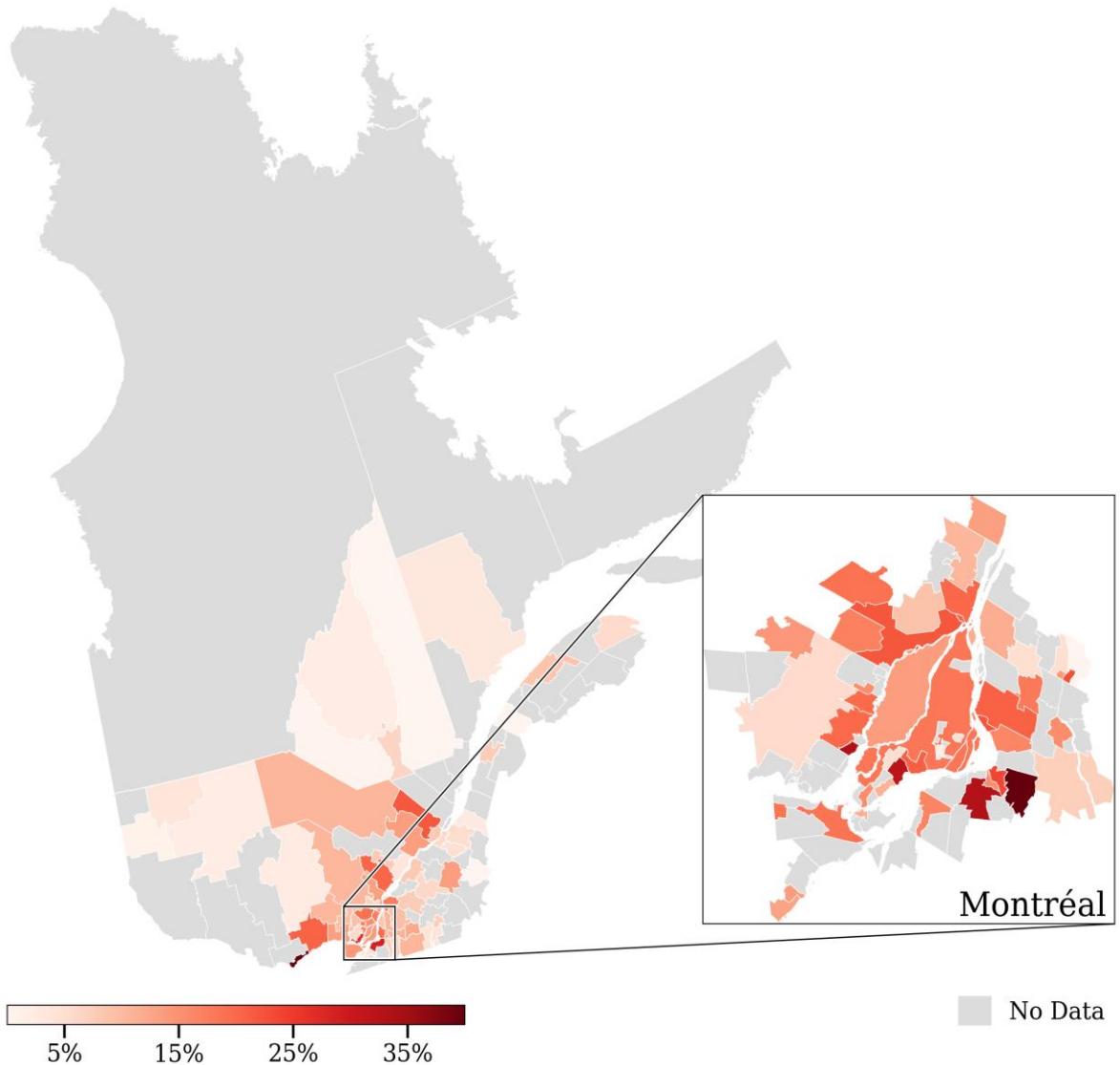
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- The model indicates that in Calgary, the average rent will rise to ~\$2,200 by 2027
- The model indicates that in Calgary, the average rent will rise to ~\$2,600 by 2032

Rent Projections 2023 to 2027

Quebec and Montreal

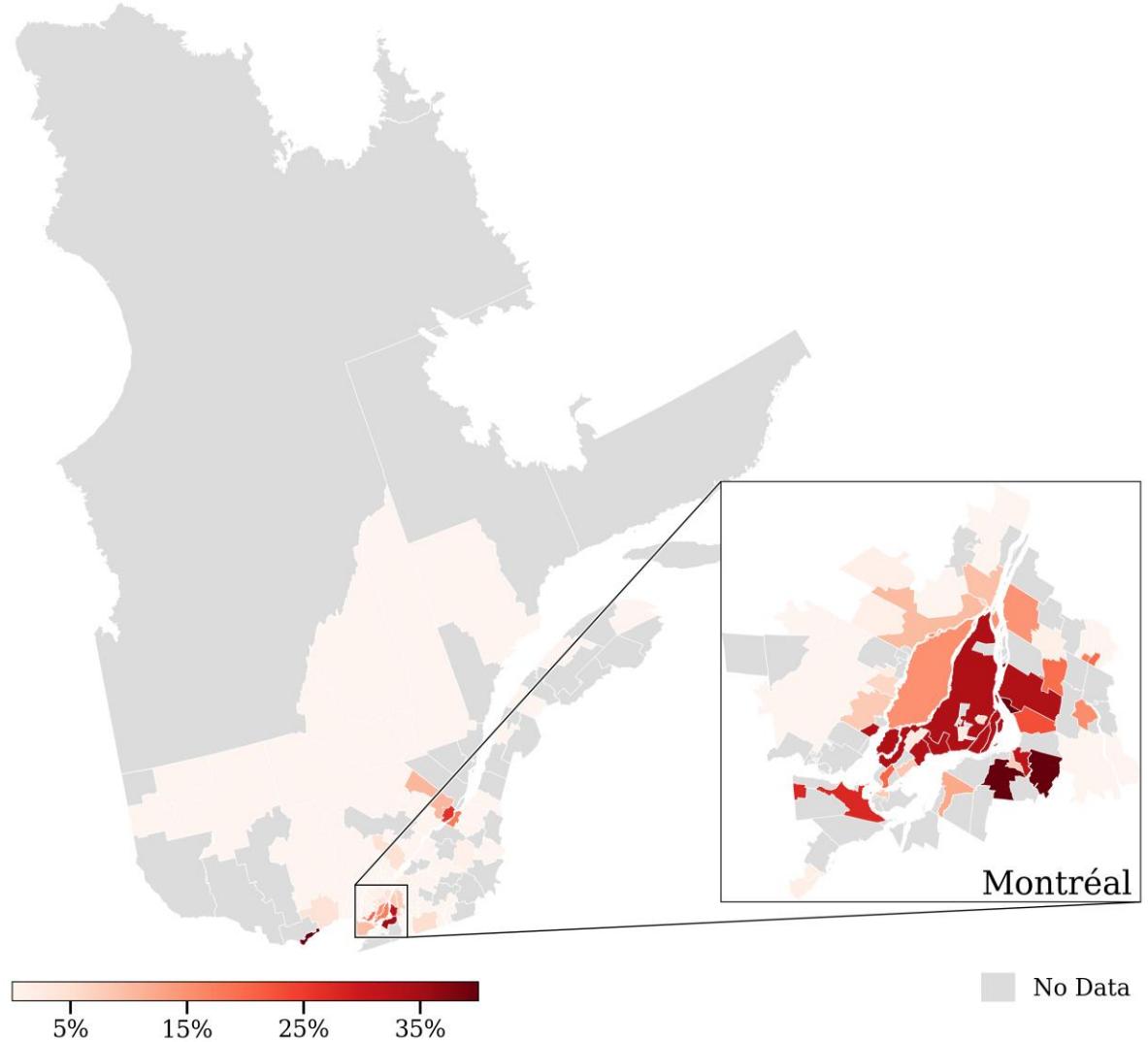


- The average rent in Montreal is ~\$2,100 for a two-bedroom apartment in March 2023*
- The model indicates that in Montreal, the average rent will rise to more than \$3,325 by 2027

*Source: Rentals.ca

Rent Projections 2027 to 2032

Quebec and Montreal

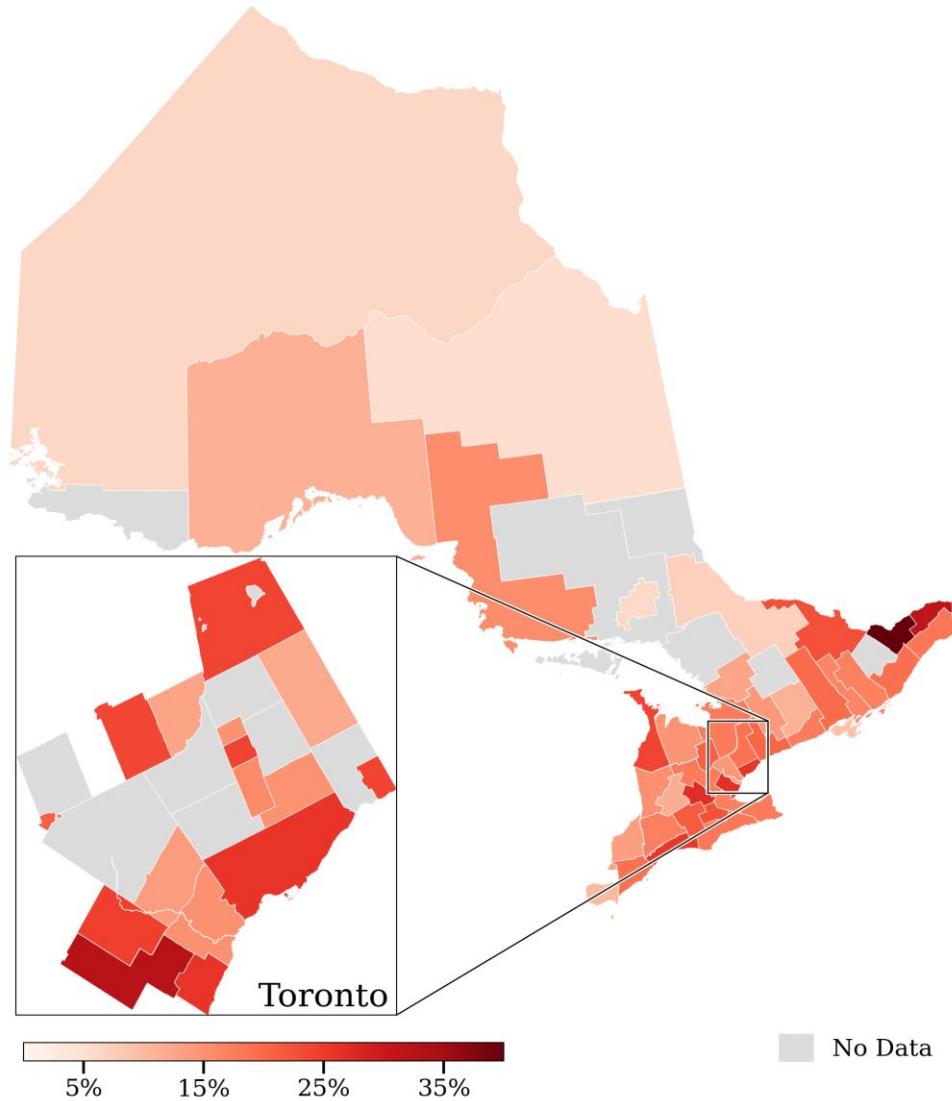


- The average rent in Montreal is ~\$2,100 for a two-bedroom apartment in March 2023*
- The model indicates that in Montreal, the average rent will rise to more than \$3,325 by 2027
- The model indicates that in Montreal, the average rent will rise to more than **\$4,325** by 2032

*Source: Rentals.ca

Rent Projections 2023 to 2027

Ontario and Toronto

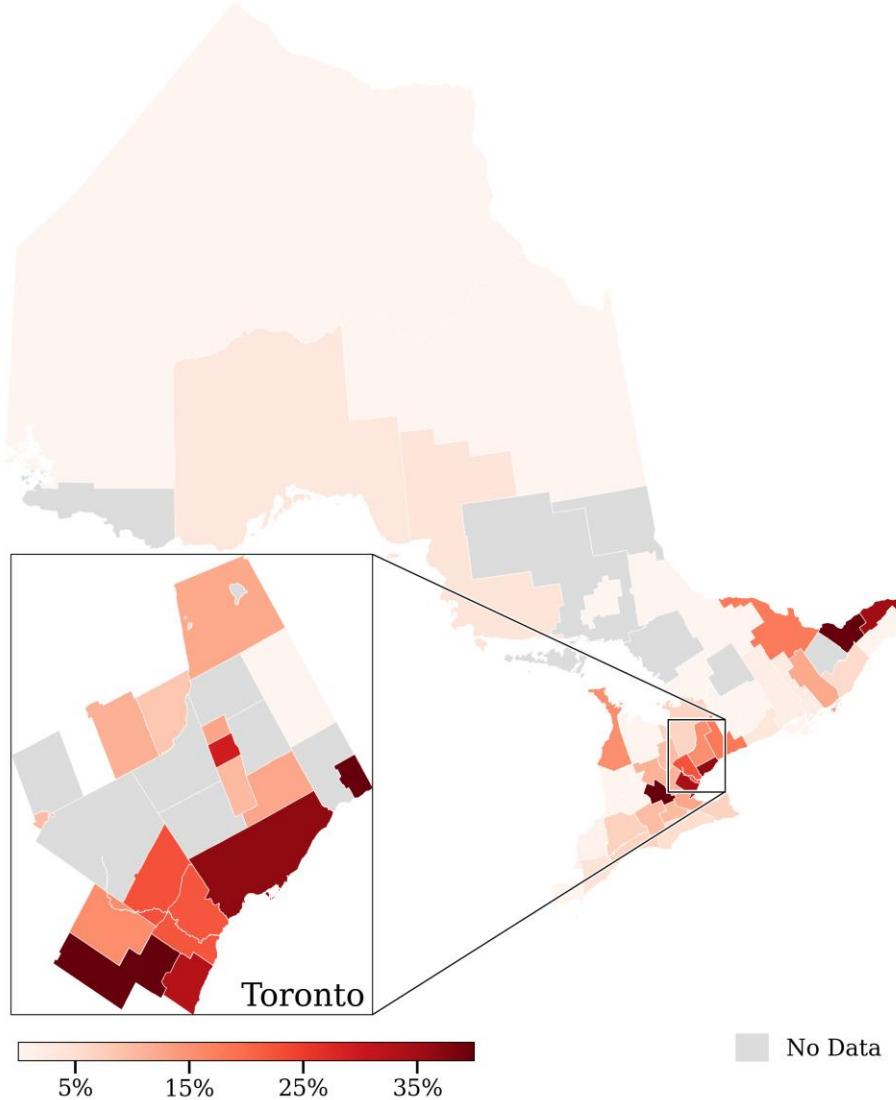


- The average rent in Toronto is ~\$3,250 for a two-bedroom apartment in March 2023*
- The model estimates that average rent in Toronto will rise to ~\$4,100 by 2027

*Source: Rentals.ca

Rent Projections 2027 to 2032

Ontario and Toronto

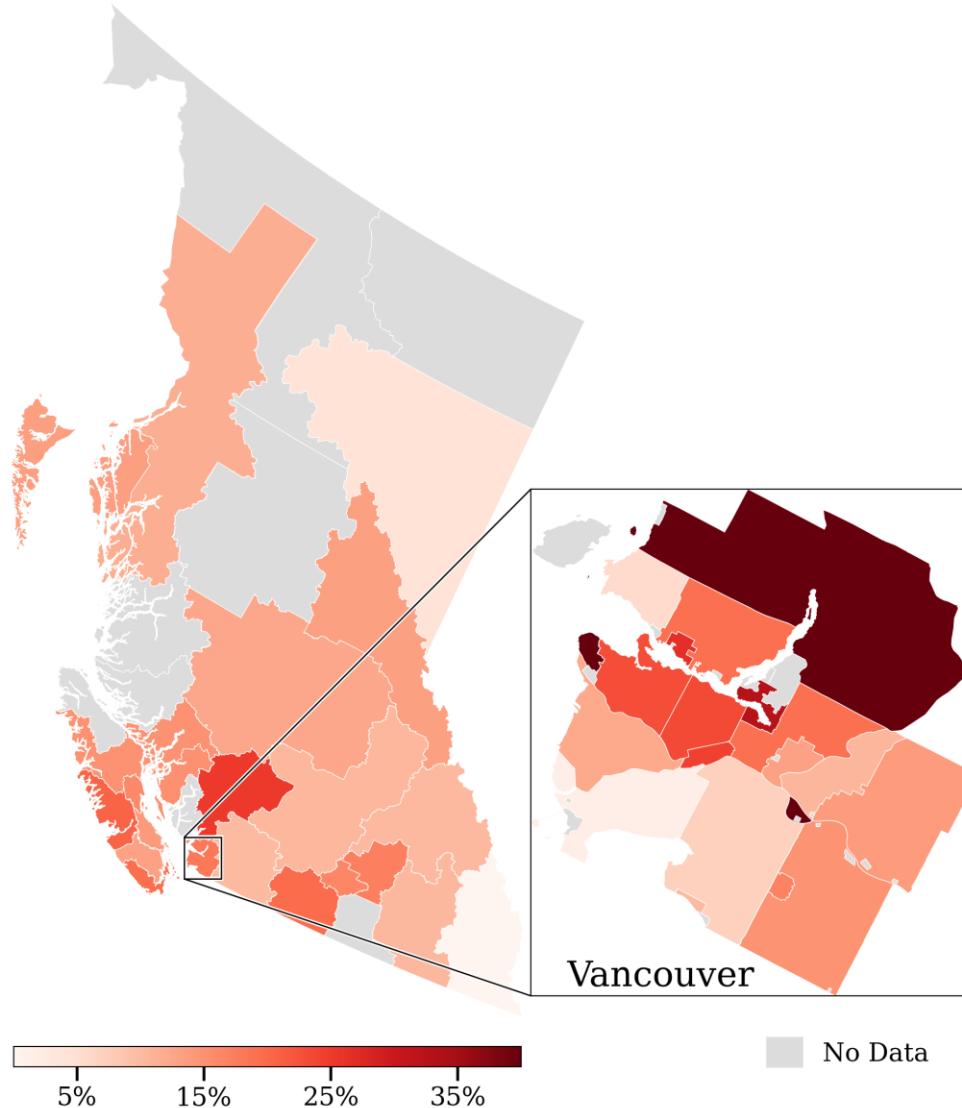


- The average rent in Toronto is ~\$3,250 for a two-bedroom apartment in March 2023*
- The model estimates that average rent in Toronto will rise to ~\$4,100 by 2027
- The model estimates that the average rent in Toronto will increase to ~\$5,600 by 2032

*Source: Rentals.ca

Rent Projections 2023 to 2027

British Columbia and Vancouver

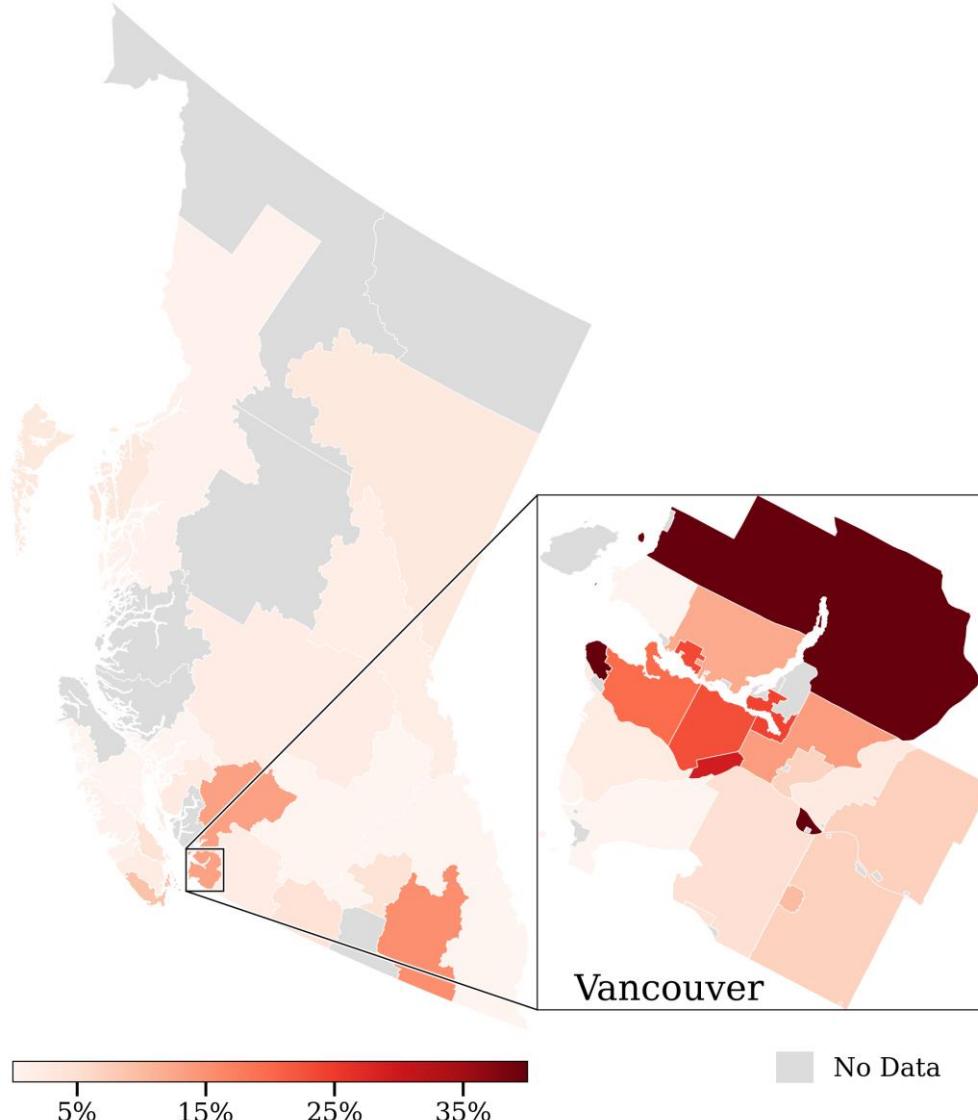


- The average rent in Vancouver is ~\$3,450 for a two-bedroom apartment in March 2023*
- The model indicates that in Vancouver, the average rent will rise to ~\$5,200 by 2027

*Source: Rentals.ca

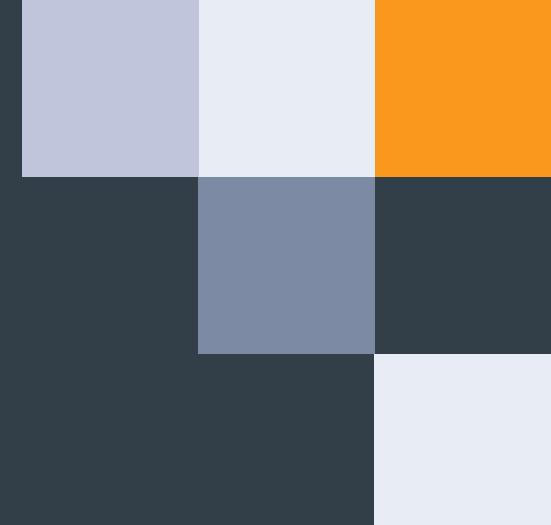
Rent Projections 2027 to 2032

British Columbia and Vancouver



- The average rent in Vancouver is ~\$3,450 for a two-bedroom apartment in March 2023*
- The model indicates that in Vancouver, the average rent will rise to ~\$5,200 by 2027
- The model indicates that the average rent in Vancouver will increase further to ~\$7,750 by 2032

*Source: Rentals.ca



Thank you

Questions?

To get access to the final White Paper or for any additional questions,
please reach out to Aaron Pittman at apittman@equiton.com



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Sources:

1. <https://consumerchoicecenter.org/the-demand-continues-will-supply-ever-catch-up/>
2. <https://www.scotiabank.com/ca/en/about/economics/economics-publications/post.other-publications.housing.housing-note.housing-note--january-12-2022-.html>
3. <https://www.canada.ca/en/immigration-refugees-citizenship/news/notices/supplementary-immigration-levels-2024-2026.html>
4. <https://www.fraserinstitute.org/blogs/canadian-homebuilding-has-not-kept-pace-with-population-growth>
5. <https://www.cmhc-schl.gc.ca/professionals/housing-markets-data-and-research/housing-research/research-reports/accelerate-supply/housing-shortages-canada-updating-how-much-we-need-by-2030>