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PROPRIETARY REAL ESTATE RESEARCH

AI-Driven Insights into Key Factors Influencing Canada's Rental Market

In partnership:

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EQUITON®

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Executive Summary

Challenges around housing affordability have become a global phenomenon, growing in severity over the last decade. In this respect, Canada is one of the most affected advanced economies in the world.

A convergence of factors has led to the unique state of the Canadian real estate market when compared to the global experience, especially among the G7 nations. Among these countries, Canada suffers the lowest average housing supply per capita at 424 units per 1,000 residents. An aggressive immigration policy enacted by the Canadian government has seen Canada's explosive population growth exacerbate an already stretched supply/demand imbalance. In just the first nine months of 2023, Statistics Canada noted that the country had seen a higher level of population growth than "any other full-year period since Confederation in 1867." Last year, Canada welcomed roughly the same number of migrants as the United States, a country some 10 times its size.

The Canada Mortgage and Housing Corporation estimates that Canada must add 5.8 million new housing units by 2031, 2.2 million of which needs to be purpose-built rental. To put this number into historical perspective, Canada has built approximately 570,000 rental units in the last 30 years. Total housing completions have tended to fall just shy of 200,000 per year, looking back over 50 years of data.

Existing analyses of Canada's housing affordability issues have not focused sufficiently on identifying local factors, which is crucial for driving effective policy changes. To address this gap, it is essential to thoroughly examine the underlying factors contributing to the crisis and identify actionable solutions.

This proprietary research, supported by artificial intelligence (AI) and a neural network machine learning model, aims to enhance the Canadian real estate industry's understanding of the supply/demand dynamics within the Canadian multi-family

residential market at a granular level. By predicting the impacts of key drivers on rental measures like median rent prices and vacancy rates at both the census subdivision and regional levels, we can uncover valuable insights.

We begin our analysis by determining the factors influencing rents and vacancy rates. Our findings demonstrate a positive correlation between higher market rents at the census subdivision level and a higher fraction of immigrants, more non-permanent residents, a greater share of the population working from home, higher educational attainment (bachelor's degrees), and higher median income. Factors such as the local unemployment rate and a higher fraction of couples without children reduce market rents. An analysis of vacancy rates does not produce economically meaningful results, as vacancy rates are at record low levels (approaching 1%). In this environment, a vacated unit is occupied quickly due to excess demand, breaking the traditional link between economic factors and occupancy.

The model identifies an inflection point along a rents-to-completions curve whereby rents, while still increasing, do so at a decelerating pace until completions (as a percentage of existing stock) reach 11-12% levels.

Importantly, our findings indicate a counter-intuitive association between an increase in housing completions and rising rents. In other words, as supply increases, market rents continue to go up, though the typical supply/demand relationship suggests they would decline. Similar findings are observed across major cities in Canada, and the country as a whole, due to a severe disparity between supply and demand.

While housing supply is broadly classified as a national issue, geographic granularity is crucial to pinpointing where impacts are most significant. Our research identifies the regions most affected by immigration, demographics, and supply constraints, and reveals their impact on market rents. The rental projections can guide both private home builders

and government organizations to concentrate their efforts on markets where the need is greatest. These regions present promising opportunities for investment in both private and public sectors (e.g. housing-enabling infrastructure such as utilities, communications, and transportation systems) and highlight the necessity of preserving existing rental stock and increasing supply new of rental stock. Governments can also bolster efficiency by utilizing the model's forecasting power to prioritize the reformation of housing policies by census subdivision to reduce development obstacles and actively collaborate with the private sector to spur homebuilding.

Based on local factors, we use a neural network model to project rental growth by applying data on 427 Canadian census subdivisions through 2032. According to our projections, rents in Toronto will increase more than 26% by 2027 and an additional 37% by 2032. Our analysis further shows that housing completions must be increased tenfold to establish what could be considered a balanced supply/demand relationship for the Greater Toronto Area. The figures are starker, still, for Vancouver. Rents in the Greater Vancouver Area are projected to grow by 52% by 2027 and another 53% by 2032. Perhaps a glimpse into population growth policy, the rental growth rate in Montreal is expected to reach approximately 18% by 2027. This is a relatively modest increase compared to other major Canadian cities, likely due to immigration controls in Quebec. The pace accelerates into 2032, rising an additional 34%. Across the country, different subdivisions exhibit variations in rental growth, indicating that effective local policies can help address affordability challenges within specific areas.

A thorough examination of these findings can highlight significant opportunities for investment in Canadian real estate over the next decade and beyond. Additionally, the AI-driven long-term projections presented in this research paper can serve as a valuable resource for governments, organizations, advocates, private real estate companies, and other stakeholders, guiding their efforts to better understand and address Canada's current housing crisis.

Research Highlights

- Subdivision-level immigration and non-permanent resident population growth levels are positively associated with higher rents.
- A greater proportion of residents working from home relative to the federal baseline increases market rents.
- Vacancy rates cannot be explained by economic factors as they tend to exhibit a departure from frictional or natural turnover, typically driven by routine renter movement, toward structural pressures. These pressures tend to be characterized by involuntary renter movement due to factors such as affordability, economic crises, and policy shifts.
- The research reflects that shifts in housing demand due to increased immigration have not been sufficiently matched by supply increases. In major cities in Canada, such as Toronto, Vancouver, Calgary, and Montreal, our analysis demonstrates that supply needs to increase by six to 10 times (with all else held constant) to cope healthily with demand shifts.
- AI-driven rental projections indicate that rents will continue to grow rapidly. For instance, in Toronto, rents are projected to grow by 26% by 2027 and by another 37% by 2032.
- There is variation in rental growth across subdivisions, indicating that policies targeting each location based on heterogeneous factors can help address the affordability problem.

Regional Data is Key to Addressing Supply/Demand Balance

While immigration is largely dictated at the federal level, its impact on the residential housing market manifests on a regional basis. Put differently, supply/demand pressures impact Canada's populus more regionally.

Delving into granular data and gaining an understanding of local housing supply/demand dynamics equips all levels of government with the necessary precision to create effective policies. Similarly, private and public investments in housing benefit from a knowledge of local factors.

According to Statistics Canada, Canada's population grew by more than 1.2 million in 2023, some 97.6% as a result of international migration. To better understand the demand impact, it is crucial to know where immigrants live and how population growth is spread across Canada. Additionally, local factors such as median income, family formation, education, and work-from-home habits are important, as they influence housing demand.

On the supply side, annual condominium completions are a good measure. While we use completions as a supply factor, supply can also be affected by zoning and permitting delays, residents' urban lifestyle preferences, land scarcity, and structural impediments such as increased material and construction costs and a chronic undersupply of qualified trades. All these factors jointly affect completions and supply. When examined judiciously, they can be powerful tools by which policymakers may impact the supply market.

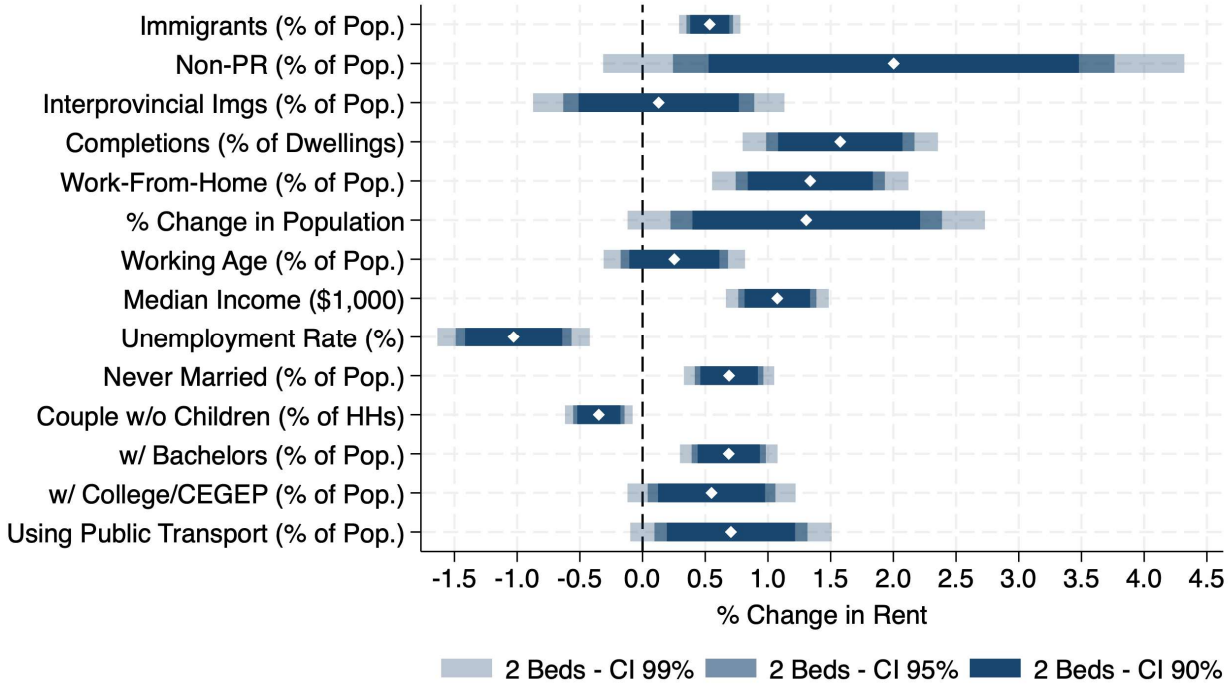
To provide a comprehensive analysis of these dynamics, we turn our attention to local data. We collect census subdivision- and division-level data from the Canada Mortgage and Housing Corporation. Specifically, we obtain market rent, vacancy, and completions data at the subdivision level. We also collect census data from Statistics Canada, focusing on immigration, demographics, income, and household characteristics. Additionally, we

use immigration and population projections from the Government of Canada to forecast market rents through 2032.

Forecasting Local Rental Demand Drivers

We start by developing a linear model to estimate the local factors driving market rent and vacancy rates. While AI-driven models offer better prediction accuracy, linear models help us understand the relationships and economic factors. Our findings are presented in Figure 1.

Figure 1: Local Factors Affecting Market Rent Growth

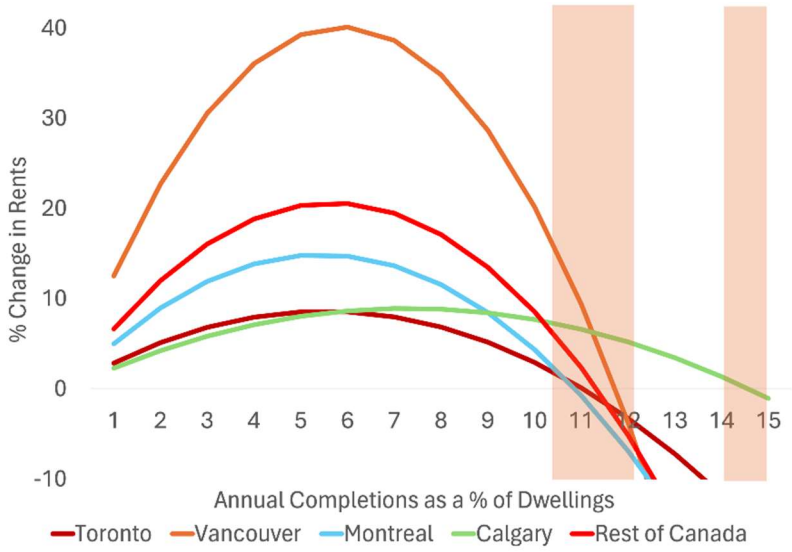


Each bar in Figure 1 represents the economic impact of each factor with up to a 90% confidence interval. If a bar crosses the zero line, it indicates that the impact has no statistical significance. The dependent variable is the annual percentage change in market rents of two-bedroom condominiums.

A 1% increase in the share of immigrants in the subdivision-level population increases rents by approximately 0.6%, with strong significance at the 1% level.[1] Similarly, a 1% increase in the share of non-permanent residents (non-PRs) in the subdivision-level, population increases rents by 2%.[2] Interestingly, a 1% increase in the share of the population that works from home raises rents by 1.4%. This result holds true even for the pre-pandemic period. A $1,000 increase in median income increases rents by approximately 1%. Holding a bachelor's degree or being never married is associated with an increase in rents, while unemployment and the presence of couples without children are associated with lower rents.

On the supply side, we relate rents to completions. A typical supply/demand relationship would dictate that as supply increases, rents should go down. However, our findings demonstrate that rents continue to increase as completions increase. To better explain this relationship, we evaluate the convexity of the impact of completions on rents, which can reflect whether there is an accelerating or decelerating impact as completions increase. We present the relationship in Figure 2.

Figure 2: Impact of Completions on Rents

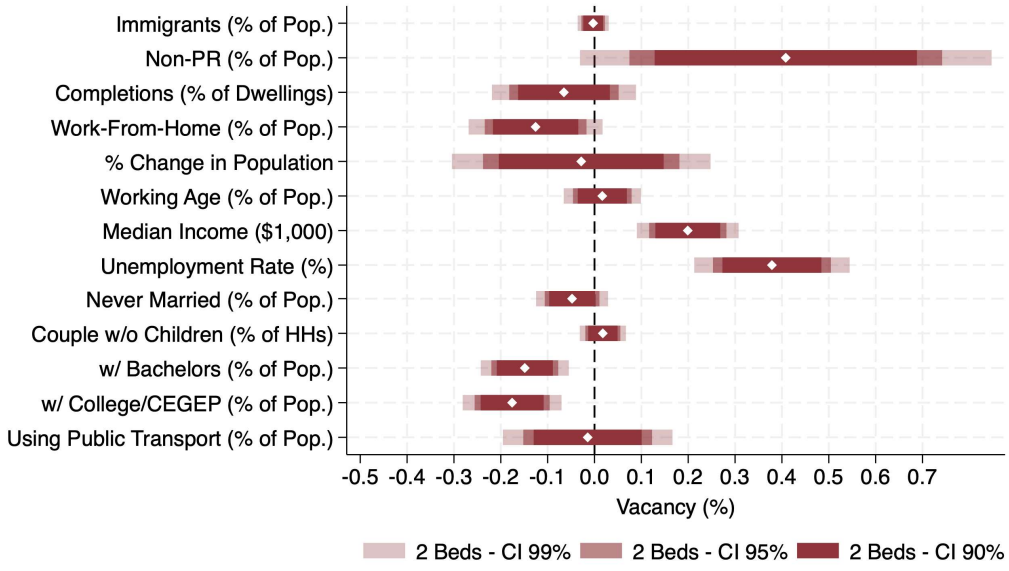


[1]According to Statistics Canada, immigrants cover all immigrants that were not born in Canada including Canadian citizens and permanent residents.
[2] Non-PRs include temporary workers and foreign students.

Figure 2 is derived from the regression in Figure 1. It reflects the relationship between rents and annual completions as a percentage of dwellings in a census subdivision. Our findings demonstrate that the positive relationship between market rents and annual completions continues to accelerate until annual completions achieve an increase of 6%. Rents only start to decrease relative to an increase in supply when annual completions enter the 11% to 12% range.

To put this into context, actual annual completions in the Greater Toronto Area stood at 1.1% in 2023. To create a negative relationship between supply and rents, annual completions must be increased to 11%. In other words, annual supply increases must reach 10 times the current levels (compounded over time) to meet the excess demand present in the market. Similarly, completions reached 2.3% in the Greater Vancouver Area in 2023. Supply increases must reach five times the current levels to ease demand. In Montreal, annual completions must increase to five times the 2023 rate of approximately 1.9%. Overall, we present evidence of excess demand for shelter in Canada, and that supply increases do not satisfy demand shifts, largely driven by immigration.

Figure 3: Local Factors Affecting Vacancy



Classic economics has often defined the natural vacancy rate (NVR) as a constant and long associated it with the concept of non-accelerating inflation rate of unemployment (NAIRU). Posited by Milton Friedman, NAIRU argues that there exists an unemployment equilibrium rate that neither stimulates nor depresses wages or inflation. Extending this concept to our exploration of residential real estate, there should exist a "natural" vacancy rate such that rental growth rates normalize to (effectively) zero.

Our linear analysis evaluates the impact of local factors on vacancy rates. Vacancy rates increase with the unemployment rate and decrease with a higher share of the population holding a bachelor's or college degree. In general, however, we do not find economically meaningful factors that drive vacancy. The main determinant for this result is that vacancy rates across Canada have been steadily progressing to 1% which would suggest an aberrant turnover and absorption level scenario. In general, residential real estate vacancy would be subject to market friction that would slow clearing. A 1% vacancy rate reflects excess demand in a housing market which is approaching a frictionless state. In our analysis, the traditional relationship between economic factors is disrupted as the vacancy rate is truncated from the bottom, resulting in inelastic demand.

Vacancy rate monitoring against NVR at the census subdivision level can be a highly effective planning tool in determining and remedying zoning and infrastructure imbalances.

AI-Driven Rental Projections Through 2032

Once we have isolated the factors driving rents, we use these factors to project future rents across Canada, utilizing a neural network model. While linear models help us understand relationships (and we determine factors as such), machine learning models improve prediction accuracy.

For our projections, we use the Government of Canada's immigration and population forecasts through 2032. In 2024, the Government of Canada announced that they would

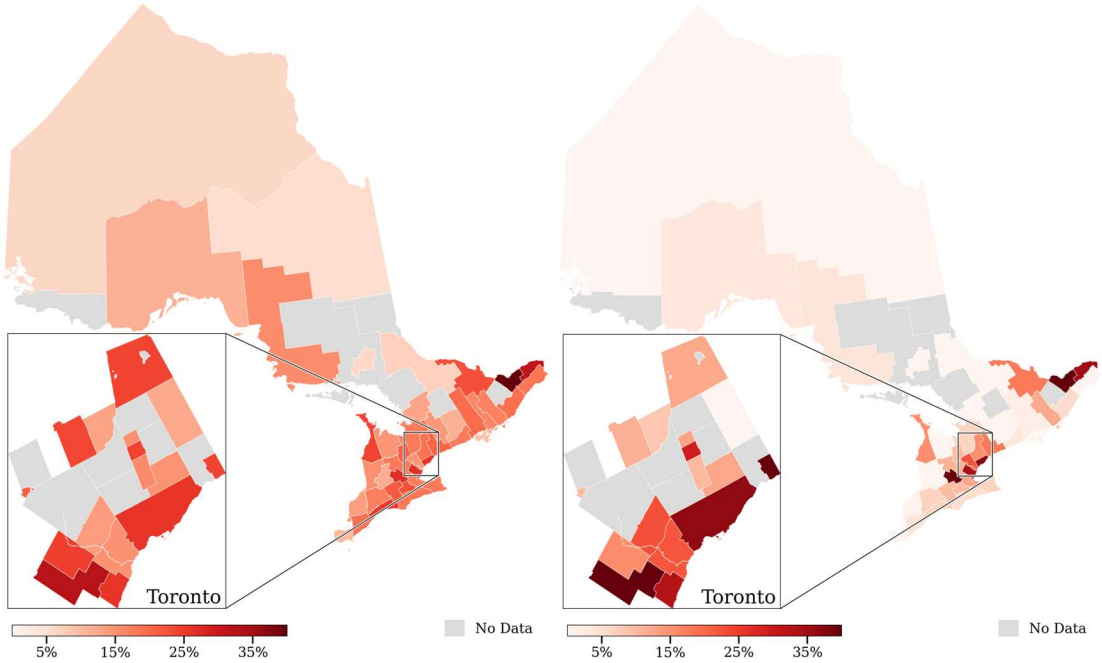
limit the number of new international student permits issued. In our projections, we reflect this policy change starting after 2027, leaving time for implementation uptake. For all other factors, we use historical trends to project future rents. Overall, our AI-driven projections indicate strong rental growth across Canada, though we observe variation across different subdivisions. Importantly, our findings show that the government's policy on restricting international students does not significantly impact rental growth.

Our findings highlight the importance of developing location-based policies and the urgency of easing supply restrictions. It is increasingly clear that achieving a healthy supply/demand relationship will rely heavily on the private real estate sector, more specifically those capable of large-scale development. Purpose-built rental focused companies, along with residential developers, can develop investment strategies based on our future rental projections, which reflect variations across different locations, clearly identifying areas with deviations in rental rates. Our findings can also help institutional multi-family asset owners target markets projecting higher rental growth while helping address supply needs on the development side.

Regional Takeaways: Toronto

The average rent in Toronto was approximately $3,250 for a two-bedroom apartment in March 2023. The model estimates indicate that in Toronto, the average rent will rise to approximately $4,100 by 2027[3]. Further, estimations indicate that the average rent in Toronto will experience an additional increase to approximately $5,600 by 2032.

Figure 4: Rental Projections in Ontario



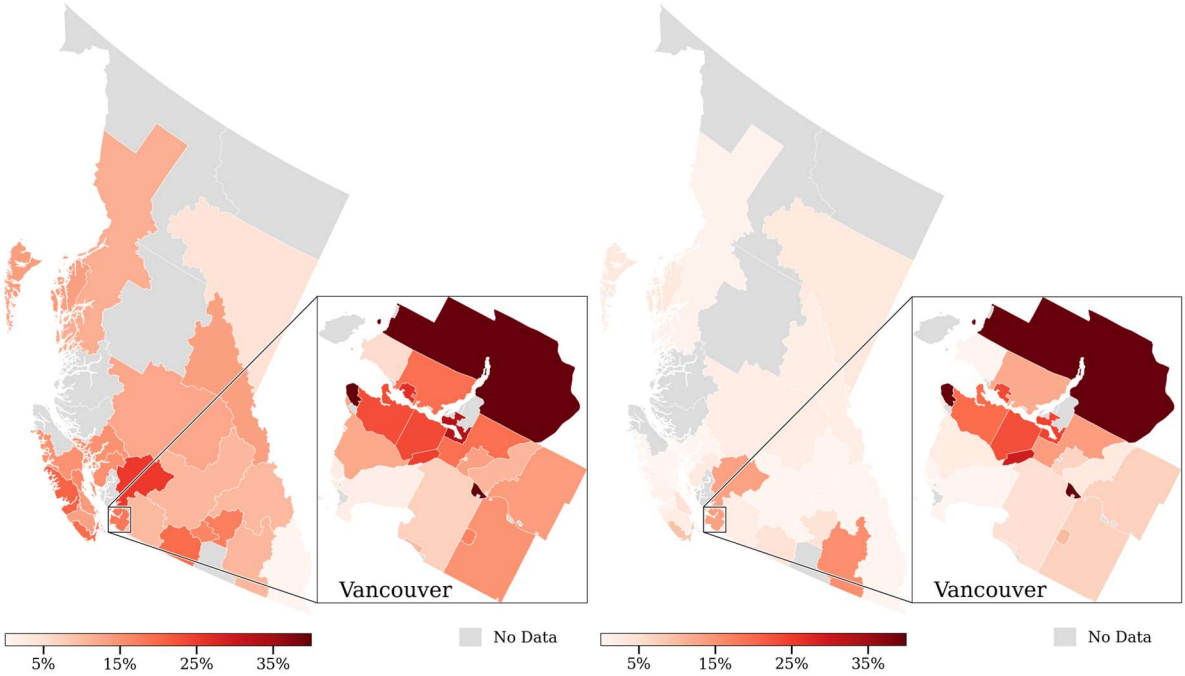
2023-2027 **2028-2032**

[3] Our neural network model estimates percentage changes in rents by 2027 and 2032 using CMHC data. We apply these percentage change estimates to the rents obtained from Rentals.ca and assume that the rents provided by Rentals.ca will grow at a similar pace projected by our model.

Regional Takeaways: Vancouver

The average rent in Vancouver was approximately $3,450 for a two-bedroom apartment in March 2023. The model estimates that the average rent in Vancouver will rise to approximately $5,200 by 2027[3]. Further, estimations indicate that the average rent in Vancouver will experience an additional increase to approximately $7,750 by 2032.

Figure 5: Rental Projections in British Columbia

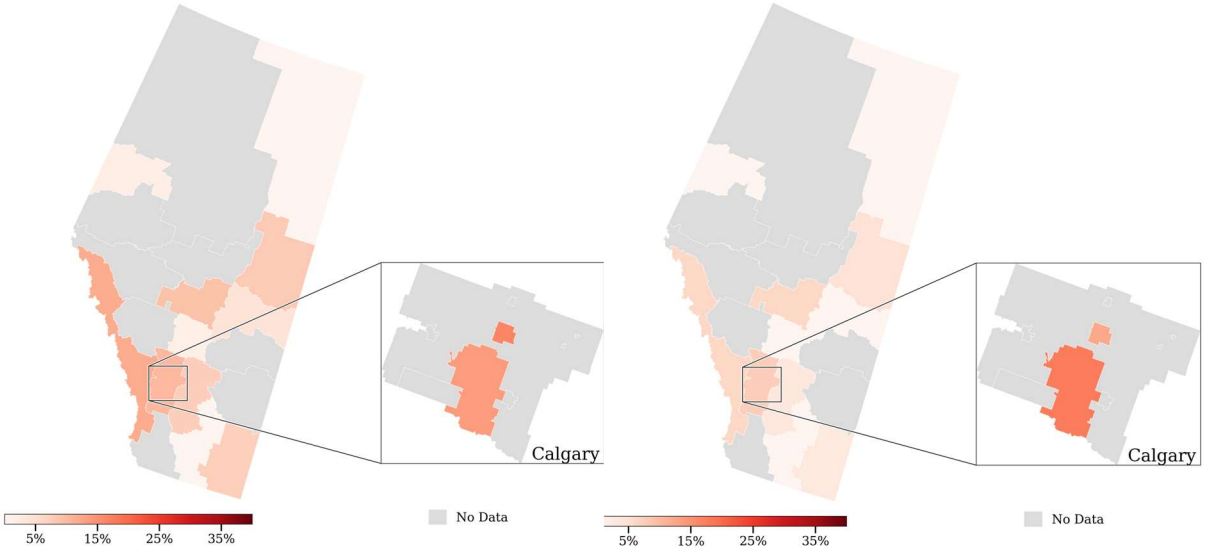


2023-2027 **2028-2032**

Regional Takeaways: Calgary

The average rent in Calgary was approximately $1,900 for a two-bedroom apartment in March 2023. The model estimates that the average rent in Calgary will rise to approximately $2,200 by 2027[3]. Further, estimations indicate that the average rent in Calgary will experience an additional increase to approximately $2,600 by 2032.

Figure 6: Rental Projections in Alberta

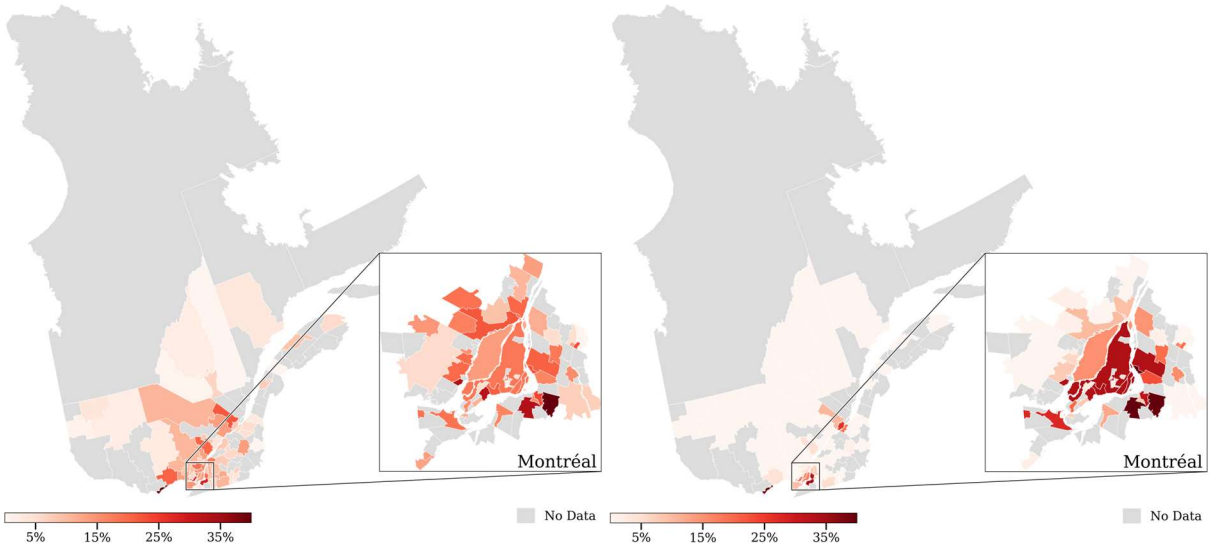


2023-2027 **2028-2032**

Regional Takeaways: Montreal

The average rent in Montreal was approximately $2,100 for a two-bedroom apartment in March 2023. The model estimates that the average rent in Montreal will rise to more than $3,325 by 2027[3]. Further, estimations indicate that the average rent in Montreal will experience an additional increase to more than $4,325 by 2032.

Figure 7: Rental Projections in Quebec



2023-2027 **2028-2032**

Summary of Recommendations

The housing affordability crisis in Canada is a multifaceted issue exacerbated by rapid population growth through aggressive immigration policies, bureaucratic red tape, and a deep and structural under-representation of qualified labour in the construction industry, all contributing to an insufficient housing supply. Our research highlights the critical need for a granular, regional approach to understanding and addressing each of these challenges.

By leveraging AI and machine learning, we have identified key drivers of rental market dynamics and projected significant increases in rents across major Canadian cities, indicating a persistent and troublesome supply/demand imbalance. Effective policy interventions must therefore focus on increasing housing supply, particularly in high-demand areas, and addressing local factors that influence market rents. Governments and private sector stakeholders must collaborate to implement targeted strategies that increase housing completions, reduce regulatory barriers, and invest in housing-enabling infrastructure. Our findings should serve as a roadmap for developing location-specific policies and investment strategies, ultimately aiming to restore a balanced and affordable housing market in Canada.