Immigration, Internal Migration, and the Rental Market *

Alison Cane†

University of Toronto

November 17, 2026

Click here for the most recent version

Abstract

This paper investigates the effect of immigration on the housing market and how internal migration can amplify or offset these effects. I extend existing decompositions of the total effect of immigration through a model that allows natives' location choices to depend on immigration shocks in both their current locations and their prospective destinations. The model shows that a given region can be affected by other regions' immigration shocks, even in the absence of a native response to immigration shocks outside of their current location. Importantly, the magnitude of the local native population's response to immigration shocks depends on the local population size relative to the national population. I study this question empirically in the context of the Canadian rental market during a period of high immigration from 2015 to 2024. Using linked Canadian administrative data, I construct an instrument exploiting the rapid increase in international student arrivals in Canada following national-level immigration policy changes. I find Canada's recent rise in immigration rates have affected vacancy rates and asking rents, but have played a limited role in the country's rising overall rental costs. These results demonstrate that immigration both retains and attracts internal migrants, highlighting the need to consider spillovers in place-based immigration policy design.

Keywords: Immigration; Internal Migration; Native Displacement; Rent

*I thank my committee, Michael Baker, Nathaniel Baum-Snow, and Fern Ramoutar, for their guidance and support. I am also grateful for many helpful conversations, comments, and suggestions from Rawnak Amin, Grant Benjamin, Anthony McCanny, Noah Spencer, and many seminar participants at the University of Toronto. Any errors in this paper are my own.

†Email: a.cane@mail.utoronto.ca

1 Introduction

An increasingly common political narrative in Canada at the moment is that housing has become unaffordable due to the country's high levels of immigration. This has become such a salient concern that the federal government introduced caps to the number of international students allowed into Canada for the first time in 2024, claiming it would help "alleviate some pressure" from the housing market (Wherry 2024). At the same time, there is growing concern that Canadians who are unable to afford housing in the most expensive cities are relocating to smaller, traditionally more affordable regions, leading to higher housing prices in those areas. While the theoretical literature predicts that increased immigration will create upward pressure on prices by increasing the demand for housing, especially if the supply side is unable or slow to respond, free mobility within Canada means that shocks could be redistributed across locations. Due to the difficulty in measuring how natives are potentially being displaced from (or attracted to) areas with increased immigrant populations, the extent to which immigration affects the Canadian housing market is unknown. It is therefore unclear to what extent the current political discussion surrounding Canada's high levels of immigration, international student visas, and housing affordability is supported by empirical evidence. In this paper, I address three main research questions on this issue: first, how do immigrants affect the Canadian rental market, in terms of both prices and market tightness? Second, how do internal migration patterns respond to immigration? And finally, what is the effect of the induced internal migration on the rental market?

I study these questions empirically in the context of the Canadian rental market following the rapid increase in immigration in the late 2010s. Using rich microdata, I am able to precisely track the locations of both immigrants and natives over time. This allows me to characterize natives' responses to immigration as well as to construct an exogenous shift-share instrument for local immigration rates, which exploits the rapid increase in the number of international students in Canada over time. I combine this with information on the near

universe of housing in the primary rental market, collected by the Canada Mortgage and Housing Corporation in their annual Rental Market Survey.

I decompose the total effect of immigration into a direct and indirect component, building on the decomposition proposed by Sanchis-Guarner (2023). The direct component refers to the effect of an increased population (immigrants). The indirect component refers to the effect of induced native relocation. My main extension is to allow domestic migrants', those moving from one location to another within Canada, relocation decisions to depend on the immigration rates in both the origin and destination. This predicts that regions will have differential responses to local immigration rates depending on their relative size within the country. Importantly, it also predicts that regions not experiencing any change in their local levels of immigration may still be affected by immigration shocks in other parts of the country as natives' location choices respond.

I show that increased immigration has a positive and statistically significant causal effect on asking rents, while it is only positively correlated with increases in overall and contract rents. The total effect of immigration is larger than the direct effect, as I find natives are both attracted to regions with higher immigration and more likely to remain in their current location following an increase in the immigration rate. Native location choices therefore amplify the effect of immigration on the housing market. Importantly, I show that the magnitude of the effect is dependent on the relative size of the location. While Canada's largest census subdivision experience increases in their native population in response to higher immigration, holding immigration rates elsewhere constant, the effect is much larger in smaller regions. Given immigration waves typically impact multiple regions at the same time, the effect on the largest cities may actually be a decrease in the native population growth rate.

The rest of the paper proceeds as follows. Section 2 provides context on the Canadian housing market (with particular focus on the rental market), immigration system, and internal mobility. Section 3 outlines the data used in the empirical strategy, which is discussed

in Section 4. Section 5 describes the main regression results. Finally, Section 6 concludes.

2 Context

2.1 Immigration in Canada

Canada has a long history of high immigration rates. As of 2021, 23% of the population were immigrants, the highest share since Canada became a country and the highest of the G7 countries (Government of Canada 2022a). While historically immigration focused on European settlement and Western expansion, since the latter half of the 20th century, Canada's immigration regime has largely focused on filling the gaps in its labour market, particularly as its natural population growth rate has fallen below replacement levels. Over half (56.3%) of permanent residents (PRs) admitted to Canada between 2016 and 2021 were admitted through the economic stream, which rewards potential applicants based on their education, employment, and language experience, with its two largest programs being the skilled worker program and the Provincial Nominee Program (which allows provinces to target specific gaps in their labour force) (Government of Canada 2022a). Permanent residents are also admitted through both the family stream, for immigrants joining a close family member, and refugee or humanitarian programs, if they qualify. A total of 8,361,505 individuals in Canada were permanent residents (or were and had since gained citizenship) at the time of the 2021 census, with 1,328,240 (almost 16%) of them gaining PR status since 2016.

Permanent residents are able to stay in Canada indefinitely and have many of the rights of Canadian citizens, including free mobility within the country. Historically, immigrants to Canada have favoured the three largest cities, Montreal, Toronto, and Vancouver. These large cities have several attractive features, such as increased resources for new immigrants, cultural amenities, and co-ethnic residents, as well as larger economies that may facilitate easier integration into the Canadian economy. Due to Canada's demographic shifts over time, immigration has been a very important factor in filling key labour gaps, particularly

in the services and skilled trade sectors. Regions in Canada that have seen large outflows of young and working age populations such as Atlantic Canada and more rural areas have struggled to attract and retain immigrants to fill those labour gaps. Programs have been introduced such as the Provincial Nominee Program and the Atlantic Immigration Program to bring immigrants to specific regions; however, there is no legal requirement for immigrants to stay in the targeted locations. Refugees, while not ultimately barred from relocation, are sponsored either by the government or a private entity and assigned to an initial location. Despite these regional efforts, retention rates have varied significantly for the Provincial Nominee Program with provinces such as Ontario and British Columbia seeing relatively high levels of retention while P.E.I. and Manitoba have fared much worse. Refugees also tend to have high rates of secondary migration and relocate in response to unfavourable conditions in their initial location, such as poor local labour market conditions (Vigezzi, n.d.).

In addition to permanent residents, Canada also has a large number of non-permanent residents, who may or may not be location constrained, depending on the program through which they come. The largest programs are the Temporary Foreign Worker Program (TFWP), where immigrants are tied to a specific employer and therefore must be located where their job is, the International Mobility Program, which grants open work permits, and student visas, which are conditional on an offer to a specific educational institution, implying the student must live within a reasonable distance. Temporary workers through the TFWP, international students, and refugees in the period immediately following resettlement should be considered location constrained. Other immigrants, both temporary and permanent, are able to relocate and frequently do in order to respond to employment and cost opportunities.

Canada saw a rapid increase in immigrant inflow following the election of the Liberal government in 2015. The new government under Prime Minister Trudeau increased the number of refugees and other immigrants. This also coincided with the 2015 introduction of Canada's Express Entry System, which significantly decreased the application processing

time and increased IRCC's capacity to review and approve applications.

This increase in openness to immigrants saw a real change in the number of immigrants entering Canada. The high number of immigrants has, however, led to significant pushback from parts of the Canadian public, media, and politicians. Increasingly hostile rhetoric has blamed immigrants, and in particular certain ethnic groups such as those from India, for perceived issues in employment, the housing market, and crime. The fear of immigrants, and in particular, international students, driving up the cost of housing led to a cap on international students being introduced in 2024.

2.2 Internal Migration

Each year between 250,000 and 350,000 Canadians and permanent residents move between provinces. This is an undercount of internal migration as many Canadians choose to relocate within their province as they move from more rural locations to larger cities with more opportunities and take advantage of the ease with which one can move within a province (such as shared language and culture and maintaining access to the provincial healthcare system).

While each province and region sees both migrant inflow and outflow, historically these patterns have not impacted each region in the same way. Atlantic Canada has seen a large outflow of young people, particularly Newfoundland and Labrador following the collapse of the cod industry and the attraction of Alberta's coinciding oil industry boom. Post-secondary education is also a large source of internal mobility in Canada. While Canada's college system (which primarily offers shorter, often two-year, programs that may be more specialized, including trade programs) typically draws domestic students from the local market, universities move a large number of students within and across the provinces each year.

Rapid advances in communication technology and infrastructure during the late 2010s and early 2020s have made remote work and long-distance communication with friends and family members easier if they do choose to relocate. The COVID-19 pandemic further

spurred the transition to remote work, allowing for employees to retain their job while benefiting from lower housing and living costs or higher amenities in a different region. Workers from high-wage cities also benefit from keeping their high salaries which may go further when renting or buying housing in traditionally more affordable regions that also have lower local salaries.

For workers who are required or choose to remain close to their current location, moving to nearby communities within the same economic region may allow them to continue to work with the same employer and enjoy many of the same amenities, all while potentially benefiting from lower housing costs. This may be particularly appealing for renters who face lower transaction costs to relocate and do not benefit from the appreciating value of their residence. I conduct all analysis at the census subdivision (CSD) level rather than the larger regional or economic level in order to capture these types of moves. Rental markets may also differ across municipal lines, which are generally captured by CSDs, including different tenant protections and housing prices (while trends between adjacent markets are likely to be correlated, there can be considerable differences reflecting property taxes and regulatory variation).

2.3 Canada's Housing Market

Single-family, owner-occupied housing has traditionally been framed as the gold standard of the Canadian housing market, with many government programs meant to support Canadians purchasing owner-occupied housing. While rental housing has often been viewed as primarily for younger Canadians and lower-income households while they save to purchase their first home, rental households make up a considerable share of the Canadian population. Between the 2011 and 2021 censuses, the number of renter households in Canada grew by 21.5% to 5.0 million renter households, making up 33.1% of Canadian households (Government of Canada 2022b). This represents a reversal in a decades-long trend of a rising homeownership rate, which rose between every census year from 1971 to its peak of 69.0% in 2011 (Government

of Canada 2022b), as many are unable to afford homeownership.

Canada's rental market is dominated by the purpose-built rental market: apartments and row or townhouses built, often by a firm rather than an individual, for the purpose of being rented to tenants. Multifamily housing may be treated differently by jurisdictions, both when operating, such as in Ontario's Residential Tenancies Act which provides for fewer protections to tenants being evicted due to a demolition if there are fewer than five residential units in the residential complex, and in construction where they may face additional permit requirements. Purpose-built rental properties may take years to enter the market from their initial proposal, as they face significant zoning and permitting requirements, such as environmental assessments, studies on their impact on city infrastructure, and public meetings. The supply of purpose-built rental properties is therefore very sticky and cannot respond quickly to demand shocks as projects come to market several years after they were first conceptualized.

The secondary rental market, in contrast, may be able to respond more quickly as individuals rent out condos, basement suites, individual rooms, or houses that were previously owner-occupied. This market is much less regulated and more able to respond quickly to demand changes. In regions where housing demand has decreased, vacant owner-occupied housing may be able to be converted to rental housing much more quickly than in regions where there is high demand for housing. The secondary rental market can feature less protection for tenants (such as protections against eviction without cause) depending on the jurisdiction.

Due to its stickiness, the housing supply side is unlikely to be able to respond immediately to large inflows of population. It may therefore be easier or necessary for current residents to relocate in the face of increased housing costs. While in the long run the supply side may be able to meet the growing demand, this is dependent on the current composition of the housing market, the regulatory and physical environments, as well as the availability of construction materials and labour (many Canadian provinces are currently facing a shortage of skilled

trade workers). The response of a market to a local population shock, such as increased immigration, depends on its ability to absorb increased housing demand. In markets where there are units that can be converted to the secondary market quickly or a high vacancy rate, the increased demand may be absorbed with minimal impact. If the supply of rental units is not sufficient to meet the increased demand, we would expect the vacancy rates to decrease considerably and rents to increase until the supply side is able to catch up. The relative size and location of a market may also affect its ability to handle an influx of residents. The presence of more affordable housing markets nearby (within commuting distance), the number of non-residents who would otherwise move there but may now be priced out, and the share of renters (as opposed to owner occupiers) may all be relevant in determining the local response.

3 Data

3.1 Rental Market Survey (RMS)

The Rental Market Survey (RMS) is conducted by the Canada Mortgage and Housing Corporation (CMHC) annually in October. I use the microdata from 2014 through 2024. The CMHC maintains a population of all structures on the primary rental market (this excludes condos) that have at least three units in them. A unit may be either an apartment or a town- or rowhouse. Each year, information on occupancy and rents is collected from a sample of structures in the population. The sampling rate varies by location to ensure that there is adequate coverage to get accurate estimates. Large buildings are explicitly sampled each year. Structures included in the previous year's sample are treated as a different stratum to ensure there is sufficient resampling to construct year-over-year rent increase estimates. All population centres in Canada with at least 10,000 people are included in the survey.

The RMS reports buildings at the postal code level. Using the Postal Code Conversion File produced by Statistics Canada and Canada Post Corporation, I construct my measures

of the rental market, vacancy rates and measures of rent prices, at the census subdivision level. My main outcome measure for housing market availability is the vacancy rate, which is calculated as the number of available market units divided by the total number of market units. This is further divided by the number of bedrooms (0 or studio, 1, 2, 3, or 4 and more) in the unit, as well as being measured for all units. The other variables of interest relate to the mean rent. I use overall rent, asking rent (the posted price for available units), and contract rent (the rent paid for units that are currently occupied). I calculate the weighted mean for each of these rents by number of bedrooms, as well as overall. All rents are nominal.

3.2 Canadian Employer-Employee Dynamics Database (CEEDD)

I use detailed population data from Statistics Canada's Canadian Employer-Employee Dynamics Database (CEEDD) to construct my measures of population and population flows. The CEEDD combines several administrative files matched at the individual level and covers both natives and immigrants. I use the personal tax filings from the Canada Revenue Agency (CRA) for the years 2001 to 2023 to create a panel dataset of individuals' locations in Canada, covering everyone who files personal taxes in Canada regardless of citizenship or immigration status. The CEEDD is constructed in such a way that the reported location of individuals is recorded when the CRA transfers the records to Statistics Canada, rather than when the taxes are filed. This transfer typically occurs in December of the year after the tax year. My panel, therefore, consists of the census subdivision where individuals who filed taxes for any year between 2001 and 2023 resided in 2002–2024. The census subdivision is reported using the 2021 Standard Geographical Classification (SGC) system, Statistics Canada's official classification for geographic areas in Canada, in each year to prevent any issues with boundary changes between census years.

While not everyone in Canada files their taxes, the coverage rate is consistently around 90% each year in my sample period. Those who file their taxes after the deadline has passed are included provided they file before the end of my sample period. I impute locations for

individuals with missing years if they are observed in the same location before and after the gap and are not recorded as having emigrated. Death dates are harmonized across a variety of sources to ensure they are correctly recorded.

I now outline several important consideratings in the construction of the final sample related to age and student status. Minors are likely to be living with parents or other guardians and therefore they are not directly participating in the housing market. As such, I drop individuals from my sample for any years before the one in which they turn 18. This aligns with the typical age at completion of secondary school in the majority of the country, a common time for young Canadians to leave their parental home. The young adults in my sample pose an additional problem: young people, particularly post-secondary students, are often highly mobile and may not consider their primary residence (where they consume housing) to be their permanent residence. Post-secondary students are permitted to use either where they live while attending school or their parents' home as their permanent residence for elections, driver's licences, provincial healthcare, and other official purposes. As such, many of the recorded locations for young students in the tax filings are likely not capturing any relocations for school. In order to address this, I drop location information for full-time post-secondary students and instead record students' locations through Statistics Canada data on post-secondary enrolment for Canadian students. I am able to identify full-time students as tax filers who report being enrolled as a full-time post-secondary student at a qualifying institution. Previous work has shown that this accurately captures around 80% of students enrolled in universities in Atlantic Canada.

The personal tax filings provide total population counts and flows; however, they do not identify immigration status or country of origin. To construct the immigration rate, I use the Longitudinal Immigration Database (IMDB), which is also a part of the CEEDD. The IMDB contains administrative records from Immigration, Refugees and Citizenship Canada (IRCC) and contains all permits and landing files for non-permanent and permanent residents in Canada issued between 1980 and 2024. Permanent residents have the right to stay in Canada

indefinitely while non-permanent residents, which includes temporary foreign workers and international students, have permits with a set expiry date. The IMDB has the intended destination census subdivision for each individual, which I use as their initial location upon arrival in Canada. I am able to match immigrants directly to their personal tax filings, if they ever file, and track their location in Canada in subsequent years in the event that they move. This gives me the total population inflow for immigrants at the CSD level each year by country of citizenship. I use this to construct my endogenous regressor and my instrumental variable, which is described in further detail in Section 4.4.

While non-permanent residents may acquire permanent residency and permanent residents may become citizens, I consider anyone who has a permit or landing year (for those granted permanent residency) post-1980 as an immigrant. While I only include new arrivals in the immigration rate, keeping immigrants already established in Canada separate from the native population allows for heterogeneity in internal mobility patterns. Permanent residents are assumed to remain in the country unless they are recorded as emigrating and I impute their location for years in which they do not file taxes. For non-permanent residents, I use their permit expiration date as the date they leave the country unless they are observed to re-enter Canada. I use the year of immigrants' first valid permit as their entry date due to the lagged nature of location data from the personal tax filings. As location is only available for the year after the first tax filing, immigrants are likely to be in Canada for a year (or longer if they do not file in their first year) before their location is first observed in the tax filing location data. I use the intended destination as the first location and location based on personal tax filings for all subsequent years.

Using the panel of individuals and their location for each year at the census subdivision level, including immigration, emigration, and deaths, I construct the population flows, or a transition matrix, between census subdivisions. This gives me the total population (restricted to those who file taxes and imputed missing years) of both natives and immigrants in a given census subdivision in a year and the flows between census subdivisions. I include the new

population count for each census subdivision each period, which I define as those turning 18 or filing for the first time if older, as well as the number of deaths for each census subdivision. I restrict the sample to census subdivisions that have a population of at least 5,000 reported in each of the census years in the period used for imputing population counts (described in more detail in Section 4.4): 2006, 2011, 2016, and 2021.

4 Empirical Strategy

There are three main research questions I address:

1. How do immigrants affect the Canadian rental market, in terms of both prices and market tightness?
2. How do internal migration patterns respond to immigration?
3. What is the effect of the induced internal migration on the rental market?

This is closely in line with the approach of Sanchis-Guarner (2023), where she considers both the total effect of immigration on housing prices (the effect that is ultimately observed, which addresses my question 1.) and the direct effect due to an increase in the local population (by virtue of there being more immigrants). She considers the difference (the indirect effect) as the product of the effect of an increase in population and the effect of immigration on internal migration, addressing questions 2. and 3.

4.1 Total Effect

I measure the total effect of immigration on the rental market as in Saiz (2007) and Sanchis-Guarner (2023) (Equation 1):

$$\Delta Y_{i,t} = \tau\left(\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}}\right) + \delta_t + \lambda_i + \epsilon_{i,t} \tag{1}$$

where $Y_{i,t}$ is one of the rental market outcomes (either the logged mean rent, to measure price, or vacancy rate, to measure market tightness) in region i in year t and $\Delta F_{i,t-1}$ is the

inflow of immigrants in i in year $t-1$ (only immigrants on their first arrival to Canada are counted) which is then normalized by the lagged population of i ($\text{Pop}_{i,t-2}$). τ, the coefficient of interest, is therefore interpreted as the percent change in the measure of rent or the percentage point change in the vacancy rate for a one percentage point increase in the local immigration rate. I include time fixed effects, δ_t and region fixed effects, λ_i, to account for difference in local amenities and trends over time. $\epsilon_{i,t}$ is the error term (standard errors are clustered at the region level for estimation). To address the endogeneity of the local immigration rate, I use a shift-share instrument as described in Section 4.4.

4.2 Native Displacement

To address the question of how immigration may impact internal migration, I extend the approach of Sanchis-Guarner (2023). Her Equation 5 defines the normalized change in native population as:

$$\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}} = \varphi \frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \theta^\top X_{i,t} + \mu_{i,t} \tag{2}$$

where $\Delta N_{i,t}$ is the difference in the native population in i between year t and year $t-1$, $\frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}}$ is the local immigration rate as in Equation (1), $X_{i,t}$ is a vector of controls (including time and region fixed effects), and $\mu_{i,t}$ is the error term.

While this allows the native population in a region to increase or decrease in response to an inflow of immigrants in that region (either positively, possibly in response to agglomeration benefits or love of diversity, or negatively, which may be due to increased housing costs, loss of jobs, or dislike of immigrants), it does not take into account incoming natives' origin location or outgoing natives' destination. As this is internal (domestic) migration, the destination or origin of anyone leaving or entering the area is also in the country and exposed to the national immigration shock at some level. It is therefore reasonable to assume in the same way that internal migration depends on the local immigration rate of i, it will also depend on the local immigration rates in the origins and destinations of domestic migrants. Similarly

other characteristics that are captured by $X_{i,t}$ in Equation (2) for i (such as the amenities and time trends in the fixed effects) are likely to be relevant in the origins and destinations as well.

I address the impact of immigration shocks in other regions on i's native population growth rate by beginning with the following identity:

$$\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}} = \sum_{j \in J, j \neq i} \frac{\Delta N_{i,j,t}}{\text{Pop}_{i,t-1}} + \frac{\text{Entry}_{i,t}}{\text{Pop}_{i,t-1}} - \frac{\text{Death}_{i,t}}{\text{Pop}_{i,t-1}} + \frac{\Delta \text{Emigrant}_{i,t}}{\text{Pop}_{i,t-1}} \tag{3}$$

where $\Delta N_{i,j,t}$ is the net increase in natives living in i due to migration between i and j ($N_{j \to i,t} - N_{i \to j,t}$, where $N_{j \to i,t}$ is the number of natives moving from j to i in year t). Summing the net flow of migrants across the set of all regions $j \in J$ gives the change in native population due to migration. Including the local entry (this can be thought of as "births" but is actually first-time filers and 18-year-olds as the population of interest excludes children) and death rates, $\frac{\text{Entry}_{i,t}}{\text{Pop}_{i,t-1}}$ and $\frac{\text{Death}_{i,t}}{\text{Pop}_{i,t-1}}$, respectively, accounts for the natural component of the native population growth rate. The final element in native population growth is the net emigration rate (the number of natives returning from abroad minus the number of natives emigrating to another country). This term could further be decomposed as the sum of net emigrants from each country, however this is unlikely to respond to local immigration shocks in the same way as domestic migration and is outside of the scope of this paper. $\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}}$, the local growth rate of the native population in region i in year t, can therefore be considered as the native counterpart to the local immigration rate. I model the unidirectional population flow from j to i ($N_{j \to i,t}$) normalized by the local population in the previous period as:

$$\frac{N_{j \to i,t}}{\text{Pop}_{j,t-1}} = \beta \frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}} + \gamma \frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \delta_t + \alpha_{j,i} + \eta_{j,i,t}. \tag{4}$$

Equation (4) allows the flow of natives moving from j to i in a given year to depend on both the immigration rates in the origin and in the destination ($\frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}}$ and $\frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}}$, respectively). The coefficient β captures the effect of a one percentage point increase in the local immi-

gration rate on the rate of people leaving the region to go to a specific destination i. Native displacement would correspond to $\beta > 0$ while natives staying in the region when they would have moved to i were it not for increased immigration corresponds to $\beta < 0$ (note that this is not the same as natives being attracted to the area as a result of its immigration levels, this is specifically the effect of j's immigration rate on natives currently living there). The coefficient γ is the effect of a one percentage point increase in the local immigration rate of the destination: $\gamma > 0$ means natives are attracted to locations experiencing increased immigration (as Sanchis-Guarner (2023) observes, possibly because of agglomeration or other economic factors) while $\gamma < 0$ means natives are less likely to move to places experiencing increased immigration (this is the displacement of would-be native movers, but not current residents leaving). The origin-destination fixed effect, $\alpha_{j,i}$, captures the time-invariant propensity of residents of j to migrate to i while year fixed effects are included in δ_t. The error term $\eta_{j,i,t}$ is estimated with standard errors using two-way clustering at both the origin and the destination levels.

Inserting Equation (4) for each unidirectional population flow across the set of possible origins and destinations (J), Equation (3) becomes:

$$\begin{aligned}\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}} &= \sum_{j\in J, j\neq i} \frac{\Delta N_{i,j,t}}{\text{Pop}_{i,t-1}} + \frac{\text{Entry}_{i,t}}{\text{Pop}_{i,t-1}} - \frac{\text{Death}_{i,t}}{\text{Pop}_{i,t-1}} + \frac{\Delta\text{Emigrant}_{i,t}}{\text{Pop}_{i,t-1}} \\ &= \sum_{j\in J, j\neq i} \frac{N_{j\to i,t}}{\text{Pop}_{i,t-1}} - \sum_{j\in J, j\neq i} \frac{N_{i\to j,t}}{\text{Pop}_{i,t-1}} + \frac{\text{Entry}_{i,t}}{\text{Pop}_{i,t-1}} - \frac{\text{Death}_{i,t}}{\text{Pop}_{i,t-1}} + \frac{\Delta\text{Emigrant}_{i,t}}{\text{Pop}_{i,t-1}}.\end{aligned}$$

Grouping $\frac{\text{Entry}_{i,t}}{\text{Pop}_{i,t-1}} - \frac{\text{Death}_{i,t}}{\text{Pop}_{i,t-1}} + \frac{\Delta\text{Emigrant}_{i,t}}{\text{Pop}_{i,t-1}}$ together as $\text{Other}_{i,t}$, this can be written as:

$$\begin{aligned}\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}} = &\sum_{j\in J, j\neq i} \left(\frac{\text{Pop}_{j,t-1}}{\text{Pop}_{i,t-1}}\left(\beta\frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}} + \gamma\frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \delta_t + \alpha_{j,i} + \eta_{j,i,t}\right)\right) \\ &- \sum_{j\in J, j\neq i} \left(\beta\frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \gamma\frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}} + \delta_t + \alpha_{i,j} + \eta_{i,j,t}\right) + \text{Other}_{i,t}.\end{aligned}$$

Setting $w_{j,i,t-1} = \frac{\text{Pop}_{j,t-1}}{\text{Pop}_{i,t-1}}$, we get the following equation:

$$
\begin{aligned}
\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}} &= (\gamma \sum_{j \in J, j \neq i} w_{j,i,t-1} - \beta(|J|-1)) \frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \sum_{j \in J, j \neq i} (\beta w_{j,i,t-1} - \gamma)(\frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}}) \\
&\quad + (\sum_{j \in J, j \neq i} w_{j,i,t-1} - |J| + 1)\delta_t + \sum_{j \in J, j \neq i} (w_{j,i,t-1}\alpha_{j,i} - \alpha_{i,j}) \\
&\quad + \sum_{j \in J, j \neq i} (w_{j,i,t-1}\eta_{j,i,t} - \eta_{i,j,t}) + \text{Other}_{i,t} \qquad (5) \\
&= \underbrace{(\gamma \sum_{j \in J, j \neq i} w_{j,i,t-1} - \beta(|J|-1))}_{\text{Effect of Local Immigration}} \frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}} + \underbrace{\sum_{j \in J, j \neq i} (\beta w_{j,i,t-1} - \gamma)}_{\text{Effect of Other Immigration}} (\frac{\Delta F_{j,t}}{\text{Pop}_{j,t-1}}) \\
&\quad + \text{Time FEs} + \text{Origin-Destination FEs} + \underbrace{\sum_{j \in J, j \neq i} (w_{j,i,t-1}\eta_{j,i,t} - \eta_{i,j,t})}_{\text{Error Term}} + \text{Other}_{i,t}.
\end{aligned}
$$

In Sanchis-Guarner (2023)'s equivalent equation relating the normalized change in native population to the immigration rate (Equation (2)), the native population growth rate ($\frac{\Delta N_{i,t}}{\text{Pop}_{i,t-1}}$) is only allowed to depend on the local immigration rate ($\frac{\Delta F_{i,t}}{\text{Pop}_{i,t-1}}$). Its coefficient corresponds to $\gamma \sum_{j \in J, j \neq i} w_{j,i,t-1} - \beta(|J|-1)$ in the above equation. Importantly, this implies that the coefficient will not be the same for places with different initial population sizes (as $w_{j,i,t-1} = \frac{\text{Pop}_{j,t-1}}{\text{Pop}_{i,t-1}}$ depends on i's population size). This follows intuitively: recall γ measures natives' attraction to a region with higher immigration. For a region i with a disproportionately high share of the country's population, even if a large share of natives in other regions decide to move to i, they will only account for a small share of i's local population. If however, a region i is relatively small, even a small portion of other regions' populations relocating will result in a large relative change in the population.

The other terms in Equation (2) similarly have corresponding terms in this specification, although they cannot be interpreted in exactly the same way. The vector of controls for location i and its coefficients ($\theta^\top X_{i,t}$ in the notation of Equation 2) is reflected in $(\sum_{j \in J, j \neq i} w_{j,i,t-1} - |J| + 1)\delta_t$ and $\sum_{j \in J, j \neq i}(w_{j,i,t-1}\alpha_{j,i} - \alpha_{i,j})$, although the introduction of other locations prevents the direct comparison. One key distinction between the two specifications

is that Sanchis-Guarner (2023) does not allow for the immigration rate of other locations to affect the local native population growth rate, nor other factors of other locations captured in the fixed effects . In this specification, an additional percentage point in the immigration rate of another location affects i's native population growth rate by $\beta w_{j,i,t-1} - \gamma$. The second term, γ, captures residents of i's response, either attraction or repulsion, to j due to immigration and is not dependent on the population size of j (the population size of i is already accounted for as the left-hand side is normalized relative to $Pop_{i,t-1}$). The first term consists of β, which reflects the response of natives in j, and is scaled by $w_{j,i,t-1}$, the relative population sizes of i and j. This implies the effect on region i's native growth rate from an immigration shock in a region with a population that is relatively larger than i's is likely to be governed primarily by β (the effect on natives in the other region) while the response to immigration shocks in relatively smaller regions may be governed primarily by γ (the effect on natives in i). The region with the larger population's response matters more as there are more natives who may move in response to the shock. The total response of the native population growth rate in region i will therefore be different for local immigration shocks in other regions based on their relative population sizes.

4.3 Direct Effect

As in Sanchis-Guarner (2023), I estimate the direct effect of immigration on the housing market by estimating the effect of any population change on the housing market. This implicitly assumes there is no heterogeneity between native and foreign-born residents' housing consumption patterns. As in Sanchis-Guarner (2023) Equation 2, I begin with the following relationship between the local housing market outcome, Y, and the total population growth rate:

$$\Delta Y_{i,t} = \rho \frac{\Delta \text{Pop}_{i,t-1}}{\text{Pop}_{i,t-2}} + \delta_t + \lambda_i + \nu_{i,t} \tag{6}$$

where δ_t and λ_i are time and region fixed effects, respectively, and $\nu_{i,t}$ is the error term. As the population consists of immigrants and natives, this can be rewritten as:

$$\Delta Y_{i,t} = \rho(\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}} + \frac{\Delta N_{i,t-1}}{\text{Pop}_{i,t-2}}) + \delta_t + \lambda_i + \nu_{i,t}. \tag{7}$$

However, $\frac{\Delta N_{i,t-1}}{\text{Pop}_{i,t-2}}$ is a function of immigration. Using Equation (5), this therefore becomes:

$$\begin{aligned}
\Delta Y_{i,t} = \rho(&\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}} + ((\gamma \sum_{j\in J, j\neq i} w_{j,i,t-1} - \beta(|J|-1))\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}} + \sum_{j\in J, j\neq i}(\beta w_{j,i,t-2} - \gamma)(\frac{\Delta F_{j,t-1}}{\text{Pop}_{j,t-2}}) \\
&+ (\sum_{j\in J, j\neq i} w_{j,i,t-2} - |J| + 1)\delta_t - 1 + \sum_{j\in J, j\neq i}(w_{j,i,t-2}\alpha_{j,i} - \alpha_{i,j}) \\
&+ \sum_{j\in J, j\neq i}(w_{j,i,t-2}\eta_{j,i,t-1} - \eta_{i,j,t-1}) + \text{Other}_{i,t-1})) + \delta_t + \lambda_i + \nu_{i,t} \\
= \rho(&1 + \gamma \sum_{j\in J, j\neq i} w_{j,i,t-2} - \beta(|J|-1))\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}} + \rho \sum_{j\in J, j\neq i}(\beta w_{j,i,t-2} - \gamma)\frac{\Delta F_{j,t-1}}{\text{Pop}_{j,t-2}} \\
&+ \rho((\sum_{j\in J, j\neq i} w_{j,i,t-2} - |J| + 1)\delta_t - 1 + \sum_{j\in J, j\neq i}(w_{j,i,t-2}\alpha_{j,i} - \alpha_{i,j})) \\
&+ \delta_t + \lambda_i + \rho\text{Other}_{i,t-1} + \rho \sum_{j\in J, j\neq i}(w_{j,i,t-2}\eta_{j,i,t-1} - \eta_{i,j,t-1}) + \nu_{i,t} \\
= &\underbrace{\rho(1 + \gamma \sum_{j\in J, j\neq i} w_{j,i,t-2} - \beta(|J|-1))}_{\text{Effect of Local Immigration}}\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}} + \underbrace{\rho \sum_{j\in J, j\neq i}(\beta w_{j,i,t-2} - \gamma)}_{\text{Effect of Other Immigration}}\frac{\Delta F_{j,t-1}}{\text{Pop}_{j,t-2}} \\
&+ \text{Fixed Effects} + \rho\text{Other}_{i,t-1} + \underbrace{\rho \sum_{j\in J, j\neq i}(w_{j,i,t-2}\eta_{j,i,t-1} - \eta_{i,j,t-1}) + \nu_{i,t}}_{\text{Error Term}}.
\end{aligned} \tag{8}$$

As in Sanchis-Guarner (2023), by substituting native population growth with its relationship with immigrant population growth into the direct effect equation, we mechanically get the relationship between the total, indirect, and direct effects. If we hold the immigration rate of regions other than i constant, and our instrument for $\frac{\Delta F_{i,t-1}}{\text{Pop}_{i,t-2}}$ (described in the

following section) is uncorrelated with the error terms of other regions, this is:

$$\tau_{i,t} = \underbrace{\rho}_{\text{Direct effect}} + \underbrace{\rho(\gamma \sum_{j \in J, j \neq i} w_{j,i,t-2} - \beta(|J| - 1))}_{\text{Indirect effect}}. \tag{9}$$

Note that previously the total effect of immigration, τ, was considered as a constant while here it is dependent on both the location, i, and year, t (τ_i). This is due to the effect of immigration on native displacement depending on the relative population of i (which need not be constant over time). The overall effect τ is simply the average of the $\tau_{i,t}$ provided the instrument is independent of local population sizes.

4.4 Instrument

The estimated total, indirect, and direct effects of the linear models in the previous sections will suffer from bias due to the endogeneity of the immigration rate without an adequate identification strategy to address this endogeneity, such as using an instrument. Immigrants in Canada are (mostly) able to choose where to live and they may consider the state of the local housing market in that decision. Additionally, factors that attract native migrants such as a strong local economy (which may in turn increase the cost of housing) may also attract immigrants. Estimation is further complicated as terms are normalized by the local population, which is composed of the native and immigrant populations. While using the one-period-lagged population in the denominator removes the issue of immigrants or natives' location choice that period affecting it, there could still be an issue if migration patterns are affected by immigration (the native displacement I am measuring in Equation 5) and immigration rates are correlated over time. To address this, I use a combination of a shift-share instrument for the incoming flow of international students based on historical settlement patterns for their country of origin (a variant of the common ethnic enclave instrument, such as in Card (2001)) and an imputation of the population based on historical internal

migration patterns, as in Sanchis-Guarner (2023).

The imputation is done separately for both the native and existing immigrant (who are already located in Canada) populations. For both groups, the rate of moves between census subdivisions between 2002 and 2003 are observed and used as the transition probabilities. The initial populations (observed in 2002) are then imputed for the subsequent year using the transition probabilities, the local death rates from the base year, the observed new population (first-time tax filers and those turning 18), and in the case of the immigrant population, the instrumented number of incoming immigrants. This process is then repeated each year to impute a population that is not affected by changes in the domestic migration patterns caused by immigration.

While it has been established that immigrants tend to locate in regions with higher co-ethnic populations (ethnic enclaves), there may be concern that the number of incoming immigrants at the national level may be shaped by the local housing and economic conditions experienced by past immigrants in Canada. To address this, I use a different instrument exploiting the rapid increase in the number of international post-secondary students in Canada. The 2016/17 academic year saw a large increase in the number of international students studying in Canada. Importantly, this increase was unlikely to be related to the local housing market conditions where schools are located, but rather a series of factors at the national and international level. Internationally, the US and the UK both saw political shifts that were largely anti-immigrant, with the election of Donald Trump in the US and the UK's referendum to exit the European Union. Applications for student visas in the US (F-1) peaked in 2014/15. These political changes may have made Canada appear more favourable in comparison. In addition to these international shifts, Canada made immigration easier and more appealing to students. The Express Entry system introduced in 2015 significantly reduced the processing time for applications while the Post-Graduation Work Permit Program allows international students to remain in Canada following graduation, giving them a pathway to permanent residency and citizenship. Importantly, these pull factors operate

at the national level and are not directly related to local housing market conditions.

The instrument, the predicted number of international post-secondary student arrivals, is calculated by summing across all countries the product of the national level of post-secondary students with a valid study permit that year from a given country (the shift) and the fraction of post-secondary students from that country who went to that region in the base period (the share). I use 2012–2014, the period preceding changes to the immigration entry system and Canada's election, as my base period for the shares.

5 Results

I first present estimates of the total effect of immigration and the direct effect of population growth on rents and vacancy rates, comparing OLS estimates with estimates based on the international student instrument described above. I then examine how natives' migration responds to immigration in both their origin and destination.

5.1 Rental Market Outcomes

As predicted by a simple model of rising demand in a market with sticky supply, the local population growth rate is positively associated with rising overall rents. Estimates of Equation 6, which measures the direct effect, are presented in Table 1 as the coefficients on population growth rate. The estimates show that a one percentage point increase in the local population growth rate is associated with an approximately 0.2% increase in the mean overall rent on average. This association can be decomposed into two components: contract rents, which are the rents paid by existing tenants under a lease, and asking rents, which are the rents listed for available units. The results suggest that the association is driven by contract rents: a one percentage point increase in the local population growth rate is associated with a 0.2% increase in the mean contract rent, while overall asking rents show no significant difference. Comparing the estimates across unit sizes (columns 2 through 6),

the association for both overall and asking rents appears to be driven by larger units, with statistically significant increases estimated only for the mean overall and asking rents of two, three, and four-or-more bedroom units. No statistically significant differences are observed for the smallest units: studio and one bedroom units (although I cannot reject that the effect is the same as the larger units). The association between the local immigration rate and overall rent, the total effect, measured by the estimates of Equation 1, is less clear. An increase in the local immigration rate appears to be associated with a modest decrease in overall rent, however this result is not statistically significant.

While these associations account for both time and region fixed effects, there is still a high risk of endogeneity in both the local immigration and population growth rates. For example, an expansion in the local economy may attract new residents, both immigrants and native migrants, while also increasing households' incomes and willingness to pay for housing. As discussed in Section 4.4, I address this endogeneity by using an instrument based on the predicted number of international post-secondary students. The results for Equation 1 using the instrumental variable described in Section 4.4 are presented in Table 3 as the coefficients on the immigration rate while the results for Equation 6 are shown as the coefficients on the population growth rate. By contrast to the OLS results, the IV estimates find no statistically significant total or direct effect on overall rent, with small negative point estimates in both cases. In fact, I find no statistically significant effect of the local immigration or population growth rate on the overall mean rent for any unit size. Contract rents, making up a large component of overall rents, follow a similar pattern, with no statistically significant effect of the local immigration or population growth rate on the mean contract rent in any specification.

The clearest causal effects emerge for asking rents, the listed price of available units, where I find large positive coefficients for one- and two-bedroom units, which make up the largest share of all units. A one percentage point increase in the local immigration rate is associated with an approximately 8.6% increase in the mean asking rent for one-bedroom units and an

approximately 7.8% increase for two-bedroom units, statistically significant at the 10% and 5% levels, respectively. The coefficient on asking rents across all unit sizes is also positive, though not statistically significant. Consistent with the attraction of native migrants to high immigrant areas that I discuss below in Section 5.2, the direct effect of immigration, as captured by the population growth rate, is smaller than the total effect captured by the immigration rate itself: a one percentage point increase in the local population growth rate is associated with an approximately 6.2% increase in the mean asking rent for one-bedroom units and an approximately 5.2% increase for two-bedroom units, significant at the same levels as their total-effect counterparts. The coefficient on asking rents across all unit sizes is again positive but not statistically significant.

The concentration of the effects on one- and two-bedroom units reflects both the composition of the rental market and that of arriving immigrants. These units make up the largest share of the market, and certain classes of new immigrants—particularly international students—may be especially likely to rent smaller units. Because my instrumental variable design captures variation in the immigration and population growth rates that is driven by the arrival of international students, even modest heterogeneity in treatment effects across immigrant types would lead us to expect the largest and clearest effects in smaller units. The smallest units, studio apartments, are the exception: they account for a relatively small share of the rental market, may be a luxury item relative to splitting a one- or two-bedroom unit with a partner or roommate, and are not readily available in all regions. Consequently, the data provide reliable coverage of studio units in only a limited number of CSDs, making effects for these units harder to detect.

The other aspect of the rental market that may respond to population changes is the availability of rental units. The estimated total and direct effects of immigration (the estimates from Equations 1 and 6, respectively) on vacancy rates are shown in Table 2. A positive and statistically significant relationship is observed between vacancy rates and both the immigration rate and the population growth rate. A one percentage point increase in

the location rate is associated with a 0.24 percentage point higher overall vacancy rate, on average, while one percentage point increase in the population growth rate is associated with a 0.13 percentage point higher overall vacancy rate, on average. Both of these estimates are statisticall significant at the 1% level, however, they are still subject to possible endogeneity bias. The estimates using the international post-secondary student IV to correct for this endogeneity are presented in Table 4. The estimated total and direct effects of immigration on overall vacancy rates remain positive and statistically signficant. Once again, these results appear to be driven by one- and two-bedroom units. A one percentage point increase in the local immigration rate leads to a 0.71 percentage point increase in the vacancy rate for one-bedroom units and a 0.82 percentage point increase for two-bedroom units. These are higher than the estimated direct effects of a one percentage point increase in the population growth rate of 0.53 and 0.61 percentage point increases in the vacancy rate, respectively.

5.2 Native Displacement

The estimates for native displacement are shown in Table 5. Panel A presents the results of estimating Equation 2 which is estimated at the census subdivision level and does not account for immigration in both the origin and destination. The instrumental variable results suggest that a one percentage point increase in the local immigration rate leads to a 0.13 percentage point decrease in the native population growth rate, however this results is not statistically significant. Panel B presents the results from Equation 4. The estimate of β is interpreted as a one percentage point increase in the immigration rate of the origin leads to a 0.0003 percentage point decrease in the rate of natives moving to a given destination, on average, holding the destination's immigration rate constant. The estimate of δ implies that a one percentage point increase in the destination's immigration rate leads to a 0.0022 percentage point increase in the rate of natives moving to that destination from a given origin, on average, holding the origin's immigration rate constant. In order to be able to interpret this practically, the effects need to be aggregated over each of the possible origins

and destinations.

Using Equation 5, the estimated effect of a one percentage point increase of the local immigration rate on the native population growth rate is:

$$\gamma \sum_{j \in J, j \neq i} w_{j,i,t-2} - \beta(|J| - 1) = 0.0022 \frac{(\sum_{j \in J} \text{Pop}_{j,t-2}) - \text{Pop}_{i,t-2}}{\text{Pop}_{i,t-2}} + 0.0003(369).$$

For example, the effect in 2024 for CSD i would be approximately $0.112 + \frac{70172}{\text{Pop}_{i,2022}}$, which is approximately 0.14 for the largest census subdivision in Canada and approximately 5.97 for the smallest within the sample (the effect is approximately 0.93 for the mean and 2.91 for the median CSD). The distribution of the aggregate effects across each year in the sample period are shown in Panel A of Table 6. The mean across years of the mean CSD's effect, 0.93, indicates that a one percentage point higher local immigration rate leads to a 0.93 percentage point higher native population growth rate, holding immigration rates elsewhere constant. Or, that every one additional immigrant to the CSD leads to 0.93 more natives living in the CSD than would otherwise. Note that this does not necessarily mean that 0.93 natives move to the CSD as this is a combined effects of natives being attracted to the region and being less likely to move away.

Similarly, Equation 5 can also be used to calculate the estimated effect of a one percentage point increase in the local immigration rate in all other locations on the native population growth rate in CSD i:

$$\sum_{j \in J, j \neq i} (\beta w_{j,i,t-2} - \gamma) = 0.0003 - 0.0003 \frac{(\sum_{j \in J} \text{Pop}_{j,t-2})}{\text{Pop}_{i,t-2}} - 0.0022(369).$$

For example, the effect in 2024 for CSD i would be approximately $\frac{8792}{\text{Pop}_{i,2022}} - 0.82$, which is approximately -0.81 for the largest census subdivision in Canada and approximately -1.64 for the smallest within the sample (the effect is approximately -0.93 for the mean and -1.21 for the median CSD). The mean across years of the mean CSD's effect, -0.93, indicates that

if every other CSD in Canada's immigration rate increases by one percentage point, that leads to a 0.93 percentage point lower native population growth rate in the CSD without the increase. Combining this with the effect of a one percentage point increase in a location's own immigration rate as discussed above gives the effect of a uniform one percentage point increase in every CSD's immigration rate (or a proportionate distribution of immigrants). The distribution of the aggregate effects across each year in the sample period are shown in Panel B of Table 6. The mean effect across years for the mean CSD is 0. Intuitively, this makes sense as the change in growth rates is only coming from internal migration, an increase in some CSDs must mean there are decreases elsewhere. The largest CSDs face declining native population growth rates relative to the counterfactual case without the increase in immigration, this is true for 74 CSDs in 2024. For the largest CSD, Toronto, a one percentage point increase in the immigration rate of every CSD in Canada leads to an approximately 0.68 percentage point decrease in the native population growth rate in 2024. While for the smallest CSDs in the sample, which have populations around 12,000 in 2024, the one percentage point increase in immigration rates everywhere leads to an approximately 4.33 percentage point increase in the native population growth rate in 2024. The distribution of these effects is shown for 2024 in Figure 3.

6 Conclusion

I study the effect of immigration on the rental housing market in the context of Canada's rapid increase in immigration. Using an instrumental variable exploiting the rise in international post-secondary students driven by national and international policies, I find no statistically significant effect on contract or overall rents. I find a one percentage point increase in the local immigration rate leads to an approximately 8.6% increase in the mean asking rent for one-bedroom units and an approximately 7.8% increase for two-bedroom units. These increases represent the total effect of immigration, which captures both the

direct effect caused by immigrants increasing the total population (which I estimate at 6.2% for one-bedroom units and 5.2% for two-bedroom units) and the indirect effect as natives are attracted to the region. For each one percentage point increase in the immigration rate, I find the native population growth rate increases by between 0.13 and 6.4 percentage points, controlling for the immigration rate in other locations. The magnitude of the effect depends on the relative population size, with larger effects in smaller census subdivisions.

These findings have important implications for policy makers. As Canada and many other countries face demographic shifts leading to aging and declining populations in certain regions, place-based immigration policies have becoming increasingly attractive. Importantly, I show that the effect of local immigration is affected by the immigratin rate in other locations. Increasing the immigration rate in targeted regions may increase the native population, bolstering dwindling populations, however if immigration rates are also high in non-targeted regions, this effect may be offset. I also provide evidence that asking rents on the primary rental market in Canada during this period are sensitive to influxes of immigrants. Future work will need to consider how other segments of the housing market, including the secondary rental market and owner-occupied housing, respond to both immigration and the induced effects on the primary market.

References

Card, David. 2001. "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration." *Journal of Labor Economics* 19 (1): 22–64. ISSN: 0734-306X, accessed October 13, 2026. https://doi.org/10.1086/209979. https://www.jstor.org/stable/10.1086/209979.

Government of Canada, Statistics Canada. 2022a. "The Daily — Immigrants make up the largest share of the population in over 150 years and continue to shape who we are as Canadians." Last Modified: 2022-10-26, October 26, 2022. Accessed October 6, 2026. https://www150.statcan.gc.ca/n1/daily-quotidien/221026/dq221026a-eng.htm.

———. 2022b. "The Daily — To buy or to rent: The housing market continues to be reshaped by several factors as Canadians search for an affordable place to call home." Last Modified: 2022-09-21, September 21, 2022. Accessed October 4, 2026. https://www150.statcan.gc.ca/n1/daily-quotidien/220921/dq220921b-eng.htm.

Saiz, Albert. 2007. "Immigration and housing rents in American cities." *Journal of Urban Economics* 61, no. 2 (March 1, 2007): 345–371. ISSN: 0094-1190, accessed May 7, 2025. https://doi.org/10.1016/j.jue.2006.07.004. https://www.sciencedirect.com/science/article/pii/S009411900600074X.

Sanchis-Guarner, Rosa. 2023. "Decomposing the impact of immigration on house prices." *Regional Science and Urban Economics* 100 (May 1, 2023): 103893. ISSN: 0166-0462, accessed June 25, 2025. https://doi.org/10.1016/j.regsciurbeco.2023.103893. https://www.sciencedirect.com/science/article/pii/S0166046223000285.

Vigezzi, Natalia. n.d. "Local Labor Market Conditions at Arrival and the Economic Integration of Refugees and Their Children."

Wherry, Aaron. 2024. "Federal government announces 2-year cap on student permits." *CBC News* (January 22, 2024). Accessed October 13, 2026. https://www.cbc.ca/news/politics/miller-cap-international-students-1.7090779.

A Figures

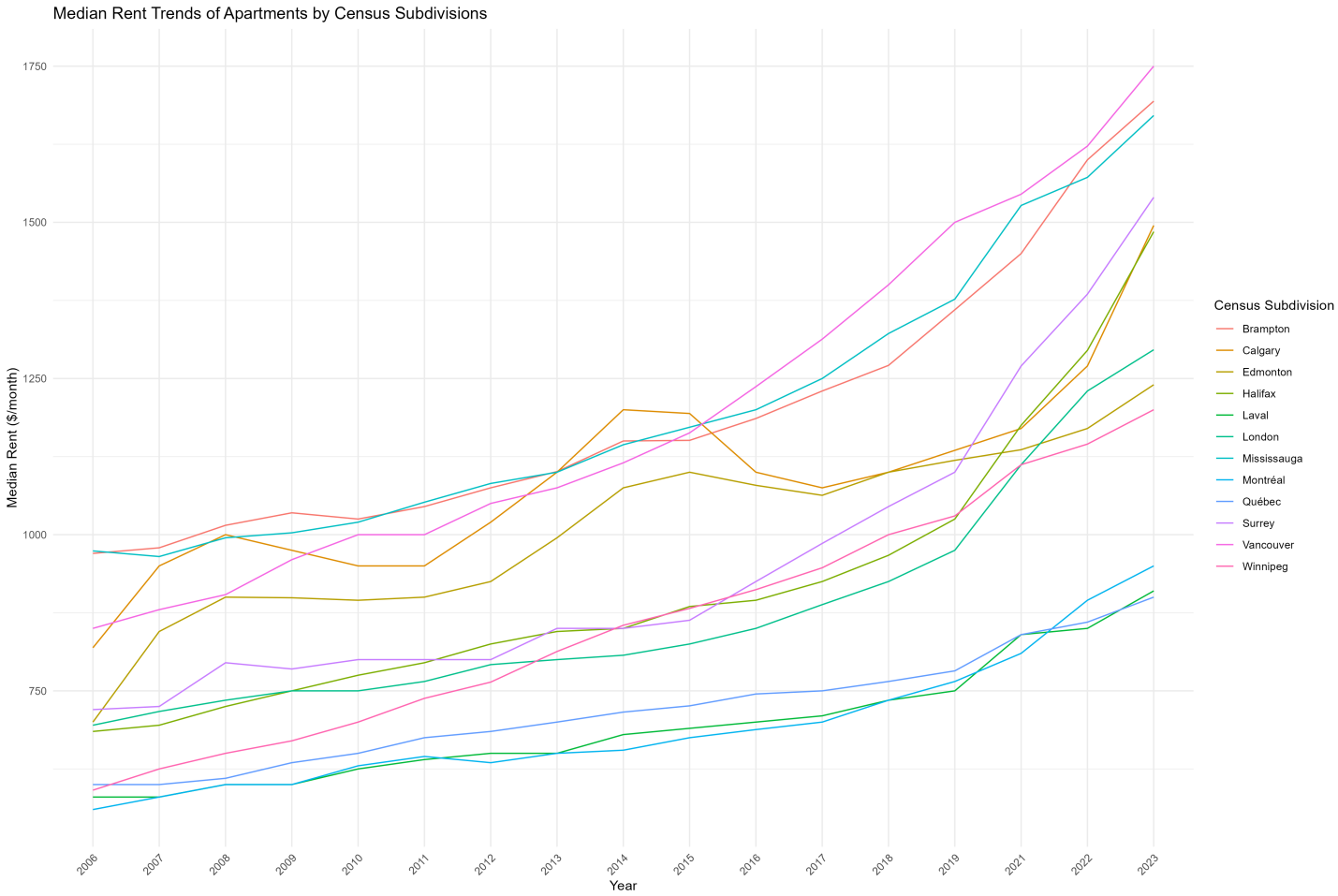


Figure 1: Median Apartment Rent Trends in Canada's Largest Census Subdivisions

Notes: The figure shows the median rent price for apartments in select census subdivisions over time. As this is the public data, the coverage is slightly different than in the analysis.

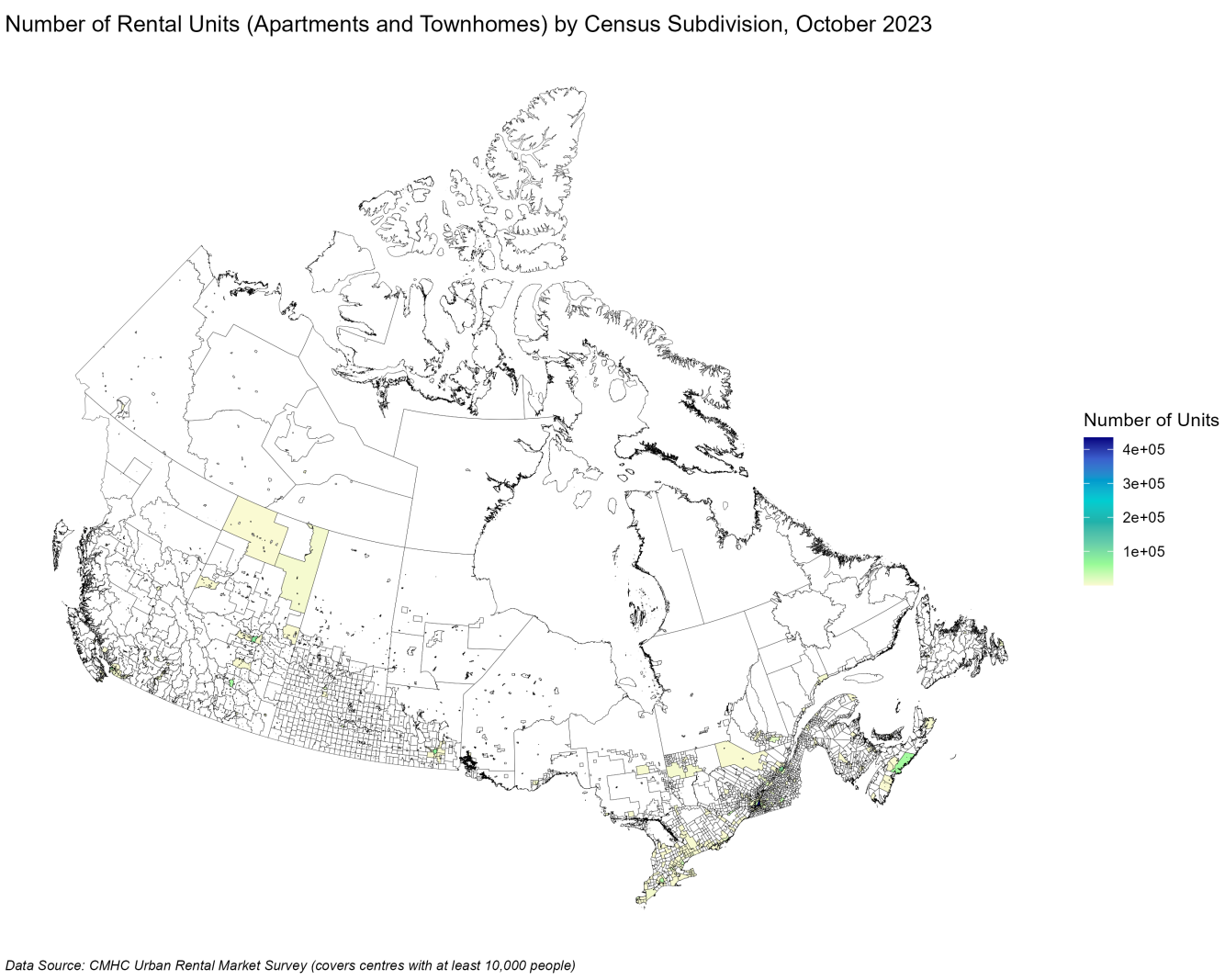


Figure 2: Count of Rental Units on the Primary Rental Market in October 2023

Notes: The figure shows the total number of units in each census subdivision at the time of the Rental Market Survey in 2023. As this is the public data, the coverage is slightly different than in the analysis.

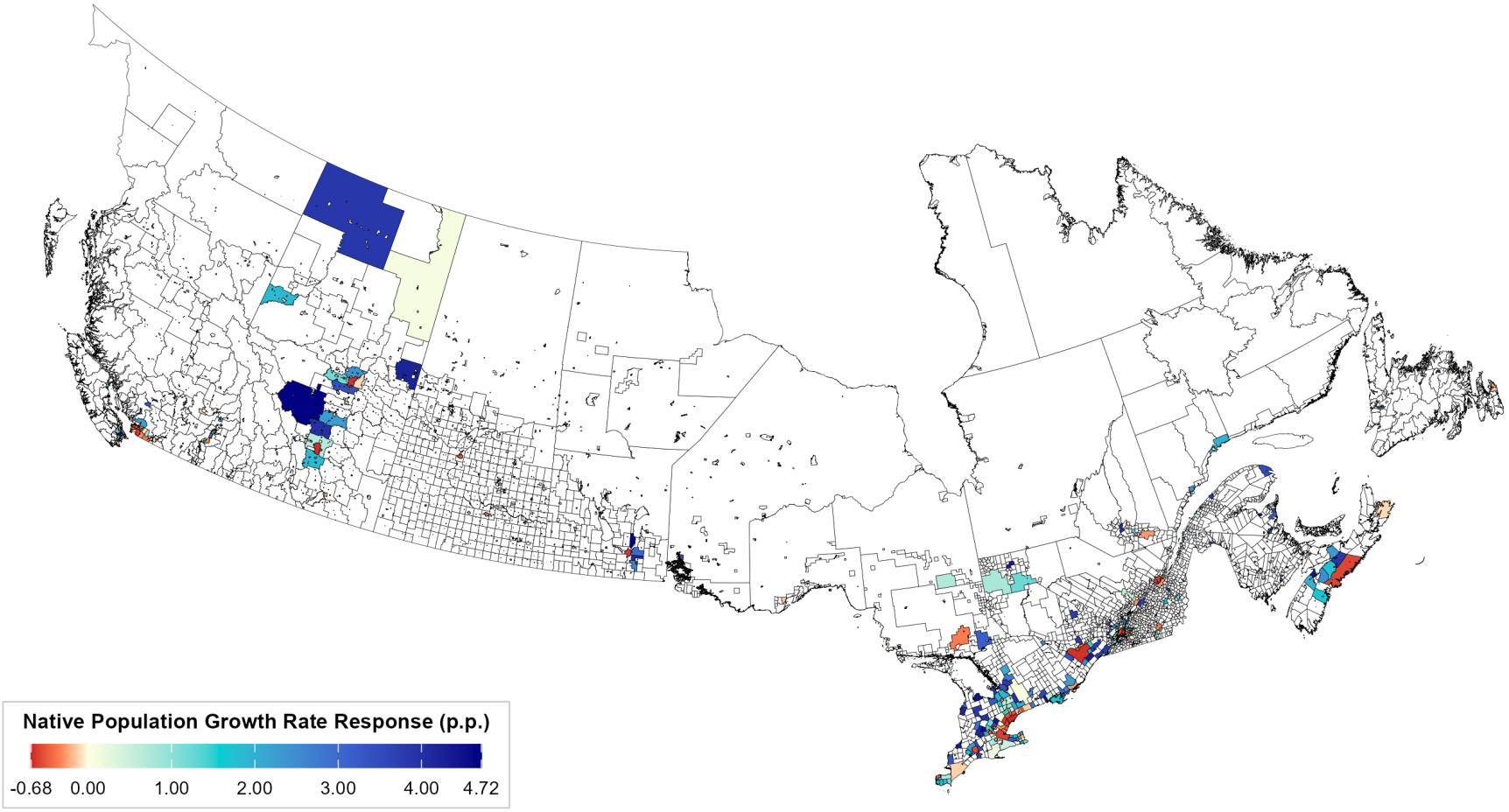


Figure 3: Effect on Native Population Growth Rate of a One Percentage Point Increase in All CSDs' Immigration Rates in 2024

Notes: The figure shows the estimated effect of a one percentage point increase in the immigration rate in all census subdivisions in 2024 on the native population growth rate. The territories are excluded due to limited data coverage. The same figure is shown for the Quebec City–Windsor corridor in Figure 4 for better visibility. Census subdivisions in white are ones that are predicted to not be included in the 370 CSD sample (see Section 5.2 for more details).

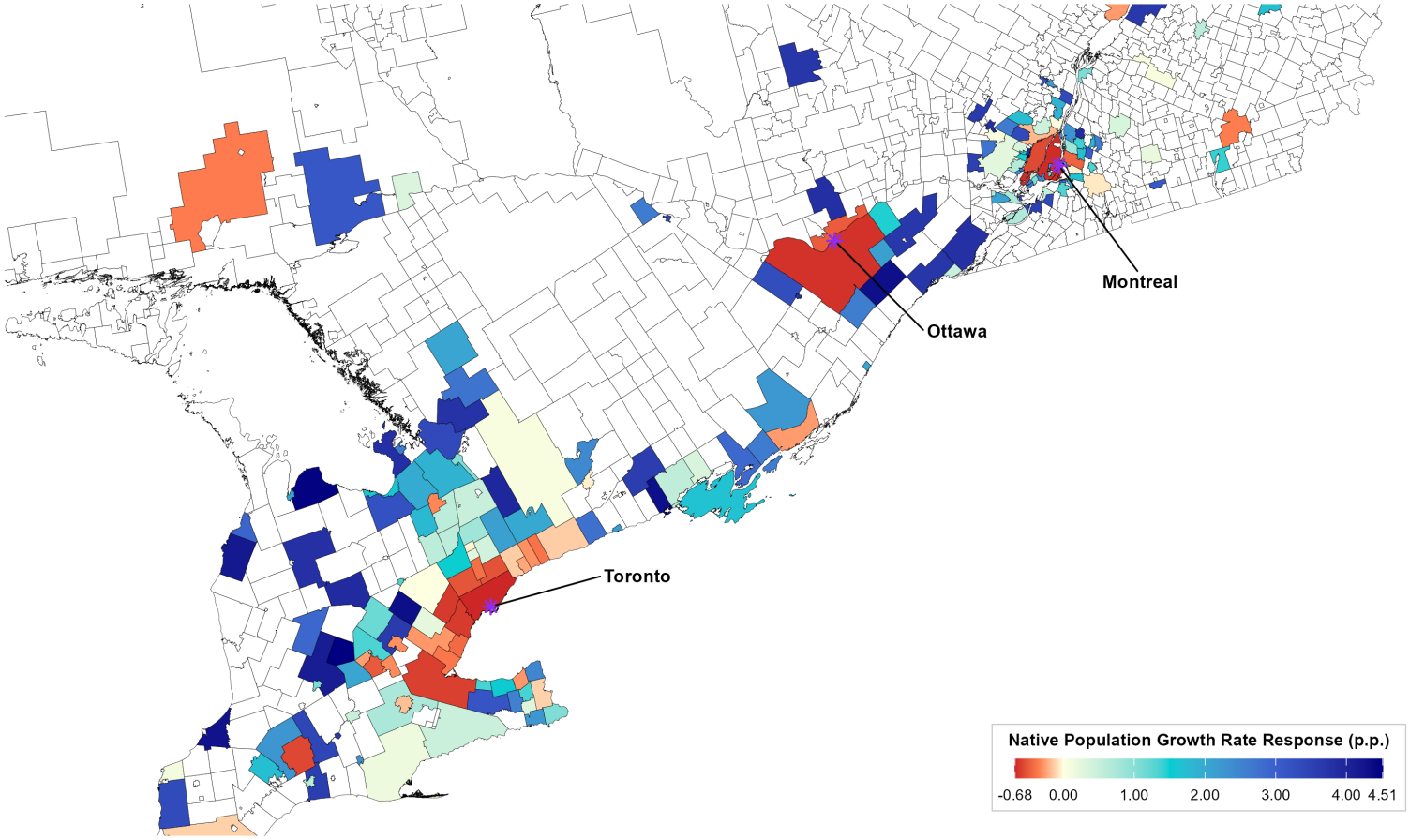


Figure 4: Effect on Native Population Growth Rate of a One Percentage Point Increase in All CSDs' Immigration Rates in 2024 in the Quebec City–Windsor corridor

Notes: The figure shows the estimated effect of a one percentage point increase in the immigration rate in all census subdivisions in 2024 on the native population growth rate. Only the Quebec City–Windsor corridor is shown for visibility. The cities of Montreal, Ottawa, and Toronto are indicated on the map. Census subdivisions in white are ones that are predicted to not be included in the 370 CSD sample (see Section 5.2 for more details).

B Tables

Table 1: Total and Direct Effect Estimates on Mean Rent—OLS

	Overall	Studio	1 bed	2 bed	3 bed	4+ bed
Change in logged mean rent in t						
Immigration rate (t-1)	-0.0760	-0.3388	-0.2040	-0.1055	0.1083	-1.5821***
	(0.1883)	(0.8820)	(0.3074)	(0.2261)	(0.3474)	(0.5986)
Population growth rate (t-1)	0.1879***	0.2054	0.2527	0.1457*	0.2014*	0.8098*
	(0.0716)	(0.3958)	(0.2042)	(0.0879)	(0.1081)	(0.4661)
CSDs	375	150	275	350	325	125
Change in logged mean asking rent in t						
Immigration rate (t-1)	0.4919	1.4918	0.0891	0.6106	-0.5139	0.3184
	(0.6359)	(2.7739)	(0.7394)	(0.7092)	(0.9920)	(8.9917)
Population growth rate (t-1)	-0.0341	1.6165	1.0065**	0.1430	0.1822	-0.7961
	(0.2932)	(1.0609)	(0.4416)	(0.2915)	(0.4361)	(2.6662)
CSDs	375	75	225	350	200	25
Change in logged mean contract rent in t						
Immigration rate (t-1)	-0.0810	-0.1313	-0.1785	-0.1557	0.0546	-1.4715**
	(0.1892)	(0.8700)	(0.3129)	(0.2209)	(0.3669)	(0.6248)
Population growth rate (t-1)	0.1978***	0.2003	0.2470	0.1694**	0.2003*	0.8015*
	(0.0674)	(0.3956)	(0.2015)	(0.0817)	(0.1125)	(0.4538)
CSDs	375	150	275	350	300	125

Notes: Significance levels: * p< 0.10, ** p< 0.05, *** p< 0.01. t=2015–2024. Clustered (CSD) standard errors are in parantheses. The number of census subdivisions (CSDs) is rounded to the nearest multiple of 25. The change in logged mean rent is calculated as the logged mean of market units in a CSD differenced year-over-year. Overall includes all units while the other specifications are limited to units with a given number of bedrooms. Asking rent includes only units that are available while contract rent is restricted to units that are currently occupied. The immigration rate in year t-1 is the number of new immigrants in the CSD in year t-1 divided by the CSD's population in year t-2. The population growth rate in year t-1 is the change in the CSD's total population (natives and immigrants) between year t-2 and year t-1 divided by the population in year t-2. All regressions include both year and CSD fixed effects.

Table 2: Total and Direct Effect Estimates on Vacancy Rates—OLS

	Overall	Studio	1 bed	2 bed	3 bed	4+ bed
Change in vacancy rate (year-over-year) in (percentage points)						
Immigration rate (t-1)	0.2432**	0.4983**	0.4005***	0.2392**	-0.1177	-1.0943**
	(0.1058)	(0.2320)	(0.1293)	(0.1129)	(0.2323)	(0.5285)
Population growth rate (t-1)	0.1281***	0.3346*	0.1403**	0.1016**	0.2126	0.1238
	(0.0455)	(0.1933)	(0.0624)	(0.0502)	(0.1307)	(0.5001)
CSDs	375	325	375	375	350	175

Notes: Significance levels: * p< 0.10, ** p< 0.05, *** p< 0.01. t=2015–2024. Clustered (CSD) standard errors are in parantheses. The number of census subdivisions (CSDs) is rounded to the nearest multiple of 25. The change in vacancy rate is calculated as the number of available market units divided by the number of total market units in a CSD differenced year-over-year. Overall includes all units while the other specifications are limited to units with a given number of bedrooms. The immigration rate in year t-1 is the number of new immigrants in the CSD in year t-1 divided by the CSD's population in year t-2. The population growth rate in year t-1 is the change in the CSD's total population (natives and immigrants) between year t-2 and year t-1 divided by the population in year t-2. All regressions include both year and CSD fixed effects.

Table 3: Total and Direct Effect Estimates on Mean Rent—2SLS

	Overall	Studio	1 bed	2 bed	3 bed	4+ bed
Change in logged mean rent in t						
Immigration rate (t-1)	-0.0326	3.9129	2.0643	0.7022	-2.5667	0.2931
	(1.1019)	(2.4920)	(1.2838)	(1.3010)	(2.5318)	(4.4195)
Population growth rate (t-1)	-0.0242	—	1.6734	0.5153	-1.6672	0.1599
	(0.8198)	—	(1.0319)	(0.9430)	(1.6720)	(2.4008)
CSDs	375	—	275	350	325	125
Change in logged mean asking rent in t						
Immigration rate (t-1)	4.3490	6.4499	8.6470*	7.8362**	-1.8391	—
	(2.9540)	(5.4765)	(4.4156)	(3.7639)	(6.0909)	—
Population growth rate (t-1)	3.0114	—	6.2493*	5.2074**	-1.2735	—
	(2.0605)	—	(3.5333)	(2.4381)	(4.2134)	—
CSDs	375	75	225	350	200	—
Change in logged mean contract rent in t						
Immigration rate (t-1)	-0.1231	4.0638	1.8992	0.4612	-3.0012	0.2664
	(1.1167)	(2.5974)	(1.3057)	(1.3101)	(2.5470)	(4.4358)
Population growth rate (t-1)	-0.0915	—	1.5395	0.3363	-1.9493	0.1463
	(0.8344)	—	(1.0384)	(0.9470)	(1.6941)	(2.4252)
CSDs	375	150	275	350	300	125

Notes: Significance levels: * p< 0.10, ** p< 0.05, *** p< 0.01. t=2015–2024. Clustered (CSD) standard errors are in parantheses. The number of census subdivisions (CSDs) is rounded to the nearest multiple of 25. The change in logged mean rent is calculated as the logged mean of market units in a CSD differenced year-over-year. Overall includes all units while the other specifications are limited to units with a given number of bedrooms. Asking rent includes only units that are available while contract rent is restricted to units that are currently occupied. The immigration rate in year t-1 is the number of new immigrants in the CSD in year t-1 divided by the CSD's population in year t-2. The population growth rate in year t-1 is the change in the CSD's total population (natives and immigrants) between year t-2 and year t-1 divided by the population in year t-2. Both the immigration rate and population growth rate are instrumented using the international student instrument variable outlined in 4.4. Estimates are not reported for specifications with weak first stages. All regressions include both year and CSD fixed effects.

Table 4: Total and Direct Effect Estimates on Vacancy Rates—2SLS

	Overall	Studio	1 bed	2 bed	3 bed	4+ bed
Change in vacancy rate in t relative to t-1 (percentage points)						
Immigration rate (t-1)	0.7772***	0.2170	0.7141**	0.8217**	0.4306	-1.5307
	(0.2629)	(1.1017)	(0.3631)	(0.3656)	(0.6725)	(2.3178)
Population growth rate (t-1)	0.5773***	0.1640	0.5293*	0.6110**	0.3210	-1.1375
	(0.2136)	(0.8352)	(0.2854)	(0.2813)	(0.5111)	(1.7014)
CSDs	375	325	375	375	350	175

Notes: Significance levels: * p< 0.10, ** p< 0.05, *** p< 0.01. t=2015–2024. Clustered (CSD) standard errors are in parantheses. The number of census subdivisions (CSDs) is rounded to the nearest multiple of 25. The change in vacancy rate is calculated as the number of available market units divided by the number of total market units in a CSD differenced year-over-year. Overall includes all units while the other specifications are limited to units with a given number of bedrooms. The immigration rate in year t-1 is the number of new immigrants in the CSD in year t-1 divided by the CSD's population in year t-2. The population growth rate in year t-1 is the change in the CSD's total population (natives and immigrants) between year t-2 and year t-1 divided by the population in year t-2. Both the immigration rate and population growth rate are instrumented using the international student instrument variable outlined in 4.4. Estimates are not reported for specifications with weak first stages. All regressions include both year and CSD fixed effects.

Table 5: Native Displacement Effect Estimates—OLS and 2SLS

	OLS	2SLS
Panel A: *Native population growth rate at the CSD level in t*		
Immigration rate (t)	0.0367	-0.1297
	(0.0551)	(0.1000)
Observations (CSD-years)	3700	3700
Clusters (CSDs)	370	370
Panel B: *Native population migration rate at the origin-destinatin level in t*		
Origin immigration rate (t)	0.000201**	-0.00031039*
	(0.00008861)	(0.00018628)
Destination immigration rate (t)	-0.00023413*	0.00221073***
	(0.00013873)	(0.00048719)
Observations (origin-destination-years)	888240	888240
Clusters (CSDs)	370	370

Notes: Significance levels: * p< 0.10, ** p< 0.05, *** p< 0.01. t=2015–2024. In Panel A, clustered (CSD) standard errors are in parantheses. In Panel B, two-way clustered (origin CSD and destination CSD) standard errors are in parantheses. The native population growth rate in year t is calculated as the change in the CSD's native population between year t-1 and year t divided by its total (native and immigrant) population in year t-1. The native population migration rate in year t is calculated at the origin-destination level as the number of natives who lived in the origin CSD in year t-1 and the destination CSD in year t divided by the total population of the origin CSD in year t-1. The immigration rate in year t is the number of new immigrants in the CSD in year t divided by the CSD's population in year t-1. The immigration rate is calculated the same way for both the origin and destination. The immigration rate, in Panel A and for the origin and destination in Panel B, are instrumented using the international student instrument variable outlined in 4.4. Panel A's regressions include both year and CSD fixed effects while Panel B's include origin-destination and year fixed effects.

Table 6: Aggregated Effects of Immigration Rates on Native Population Growth Rates

Year	Smallest CSD	Median CSD	Mean CSD	Largest CSD
Panel A: The effect of a 1p.p. increase in the local immigration rate				
2015	6.339	2.938	0.930	0.135
2016	6.101	2.963	0.930	0.135
2017	6.379	2.925	0.930	0.135
2018	6.064	2.970	0.930	0.135
2019	6.007	2.967	0.930	0.135
2020	5.997	2.955	0.930	0.135
2021	5.950	2.971	0.930	0.135
2022	6.019	2.958	0.930	0.135
2023	5.961	2.921	0.930	0.136
2024	5.972	2.913	0.930	0.136
Panel B: The effect of a 1p.p. increase in all CSDs immigration rates				
2015	4.650	1.726	0.000	-0.684
2016	4.445	1.747	0.000	-0.684
2017	4.683	1.714	0.000	-0.684
2018	4.413	1.753	0.000	-0.683
2019	4.364	1.751	0.000	-0.683
2020	4.355	1.741	0.000	-0.683
2021	4.315	1.754	0.000	-0.683
2022	4.374	1.743	0.000	-0.683
2023	4.324	1.711	0.000	-0.683
2024	4.334	1.704	0.000	-0.683

Notes: The estimated effect of a one percentage point increase in the local immigration rate is calculated at the CSD level based on Equation 5 and the estimates of β and γ from Equation 4 in Table 5 (as shown in Section 5.2). The populations used to calculate these aggregate effects come from Statistics Canada's population estimates. While only relative population size matters for this calculation, this may vary slightly from the relative population of adult tax filers used in estimation.