Racial Discrimination and the Housing Market: The Impact of Precarity on Property Values and Rents in Canada

Inez Hillel, Nora Ottenhof & David Wachsmuth
September 2022

This paper examines the impact of the relative concentration of racialized minorities and non-permanent residents on the levels and growth rates of residential property values and rents at the census-tract scale in major Canadian cities. To accomplish this, this paper uses demographic and housing-market data for the six largest CMAs (Montreal, Ottawa, Toronto, Calgary, Edmonton, and Vancouver) from the 2006 and 2016 Canadian census of population, and 2008 and 2016 multi-family building assessment data for Ottawa from the Municipal Property Assessment Corporation (MPAC). We run four regressions that examine property values in owner-occupied housing in 2016, the change in housing value in owner occupied dwelling between 2006 and 2016, rental rates in single detached dwellings, and the change in rental rates in single detached dwellings between 2006 and 2016 with CMA acting as fixed effects in all four models. We run two regressions that looks at the per-unit property values in multi-residential dwellings with 7 or more units in Ottawa in 2016 and the change in per-unit property values in multi-residential properties between 2008 and 2016. We investigate the relationship between property values and two measures of precarity, the concentration of racialized residents in a census tract and the concentration of non-permanent residents in a census tract, while controlling for structural disadvantage. Results show that precarity negatively predicts both the levels and growth rates of property values and rents in our models. Put another way, this paper finds that a high relative concentration of precarious residents—either racial minorities or non-permanent residents—in a neighbourhood decreases housing value and rents (and their rates of increase) in that neighbourhood as compared to neighbourhoods with lower concentrations of precarious residents. These findings have significant implications for understanding the financial incentives that exist in a financialized housing market.

1. Introduction

Financialization is the economic process by which financial markets and financial institutions become increasingly important relative to the real sector, as income is transferred between sectors. The financialization of housing refers to the process by which housing and real estate are treated primarily as a commodity and investment (Canada Housing and Mortgage Company, 2021). The treatment of housing as a commodity obscures its primary role of housing people, and rather becomes a means of accumulating wealth through investing. Although the extent to which housing has been financialized has increased since the 2008 financial crisis, housing has served as a commodity from an economic perspective since the emergence of private property (Fields & Raymond, 2021).

A financialized housing market differs from the traditional housing market in such that rental income is no longer the primary source of revenue, but rather rental payments are either bundled into financial assets or sold as shares in REITs (CAP REIT, 2000). Real estate investment trusts (REITs) are companies that own income-producing real estate and can be publicly traded, publicly registered but non-listed or private. Publicly traded REITs allow individual investors to buy shares in real estate portfolios that receive income from a variety of properties. (Fields, 2018; Charles, 2019). In a traditional housing market, landlords and developers would have needed to adjust the housing stock to meet the needs of the primary shareholders: renters and buyers. Now, prospective renters and buyers are second to bondholders and investors (Fields & Raymond, 2021).

Financialized redevelopment can be conceptualized as a large-scale property developer purchasing tranches of land to be used as collateral in financial investments and transactions, and as a means of acquiring and insuring greater sums of monetary capital (Archer & Cole, 2021). Existing literature has shown that the increasing prevalence of financialized redevelopment has changed the evictions landscape. When examining instances of financialized redevelopment, we observe that the phenomenon occurs disproportionately in neighbourhoods with marginalized residents (Fields & Raymond, 2021). This has traditionally been explained by the relatively weak political power held by racialized or otherwise marginalized groups, limiting the neighbourhood's ability to resist developer entry and action within the area. We additionally propose another motivating factor, that is that the artificially low value of property in neighborhoods with marginalized residents creates a profit opportunity for developers and investors not otherwise present in predominately white areas.

2. Literature Review

2.01   *Racial discrimination and housing values*

Neighbourhood racial composition is a strong determinant of appraised property value. Holding all property characteristics constant, homes located in white neighbourhoods are appraised at higher values as compared to those located in Black neighbourhoods (Howell &

Korver-Glenn, 2020). A 2019 study conducted by Andre M. Perry for the Brookings Institute found that; on average, homes in Black neighbourhoods are undervalued by $48,000 USD per home, amounting to $156 billion USD in cumulative losses for Black homeowners in the United States (Perry, 2019). Similar patterns are observed in Canada (Gyimah, Walters & Phythian, 2005). Howell & Korver-Glenn find that racial composition as a determinant of property value is stronger today than it was 40 years ago in the United States housing market (Howell & Korver-Glenn, 2020). The primary explanation for this is the advent of contemporary appraisal techniques which use sales comparisons as pricing indicators. These indicators allow the perpetuation of historic undervaluation attributed to policies such as redlining, de facto segregation, and lack of access to mortgage lenders in modern markets. Another explanation is implicit and explicit discrimination from real estate agents and other housing professionals. Studies founds that real estate agents direct Black and white homeowners to different residential areas based on racial stereotypes, thus reinforcing patterns of racial segregation. There is also evidence to suggest that Black home buyers face price discrimination in the housing market. In other words, they are charged higher rents and property prices for the same quality of home as compared to their white counterparts. While redlining did not occur in Canada, the other conditions mentioned by Howell & Korver-Glenn are consistent across both markets.

Research by Moye (2013) finds that predominantly white neighbourhoods that experienced a large increase in the percentage of Black residents had lower levels of home value appreciation as compared to similar white neighbourhoods *without* significant racial turnover. Moye suggests that these racially transitional neighbourhoods are less attractive to homebuyers as compared to majority white neighbourhoods not only because they are integrating, but because prospective homebuyers fear that transitional neighbourhoods will soon become predominantly Black. Moye states that Black neighbourhoods are considered less attractive to prospective homebuyers for a variety of reasons; namely, the perception of lower home value appreciation rates, the perception of poorer quality schools, and the perception of higher crime rates. From the Moye findings, we point to a vicious cycle in which the lack of demand for housing in predominantly Black neighbourhoods is explained by relatively slow appreciation rates, while said slow appreciation rates are explained by a relative lack of market demand.

2.02   Profit maximization and racialized redevelopment

Rent payments primarily serve as the basis of securitized bonds rather than income as they would in a traditional housing framework (CAP REIT, 2000). The biggest gains, however, come when a longstanding tenant paying lower rent is replaced with someone new, who is charged top-of-the-market rent. This is permitted in provinces where rental tenancy legislation includes "vacancy decontrol" – allowing for maximum rent increases between tenancies (August & Walks, 2018). Firms capitalize on this with what they call "unit turns" or "turnovers." Low interest rates and weak market regulation has solidified the role of housing as a financial asset used as part of an investment strategy (Lima, 2020).

In a financialized housing market, tradition profit maximization models that can be applied to non-financialized landlords fail to explain the primary source of profits, investments. Modern portfolio theory (MPT) is a method that looks at optimal portfolio construction that maximizes the expected returns and minimizes risk (Fabozzi, Gupta and & Markowitz, 2002). MPT argues that rather than evaluating the risk and return of each investment, risk and return only needs to be evaluated for the overall portfolio. This theory assumes that investors are risk-adverse, meaning that they would prefer an investment with lower risk to one with higher risk, should the expected return be equal, emphasising the desirability of diversified portfolios. The COVID-19 pandemic has highlighted vulnerability of commercial real estate further highlighting the stabilizing role that residential real estate can play in a portfolio (Deghi et al., 2021). As divestment from oil-based pension plans fuels the demand for "ethical" or "green" investments, the potential for rapid growing in financialized residential real estate markets is substantial.

When looking specifically at best practices in diversification of real estate portfolios, research finds that portfolios that income real estate and common stocks derive substantial benefits from the reduction in risk, especially through adding international real estate (Zaimovic et al., 2021). The high return on real estate securities can in part explain the global nature of financialized housing markets (Ling & Naranjo, 2002). The benefits achieved through diversifying common stock portfolios with real estate can explain the demand for real estate stocks, both commercial and residential, in pension plans (Brinson, Diermeier & Schlarbaum, 1986).

For most buyers, racial composition of an area is an exogenous variable in the profit-maximization equation. However, then the buyer is an asset management firm who can purchase a significant share of the housing available in one area, they become capable of changing the demographic mix. Canadian research on the impact of the financialization of multi-family rental housing highlights that displacement is used as a tool to maximize returns for shareholders and executives (August, 2022). Recent research from Toronto, Ontario identifies the explicit anti-Black nature of financialized housing market by identifying the ways that landlords select housing in areas with high proportions of Black renters (Lewis, 2022). Lewis' research identifies that use of disproportionate use of evictions in Black neighborhoods and visible minority areas in Toronto, findings that our consistent with our research.

3. Data

This research draws on previous work done by Howell and Korver-Glenn (2020) in their work *The Increasing Effect of Neighbourhood Racial Composition on Housing Values, 1980-2015* and Moye's paper *Neighbourhood racial-ethnic change and home value appreciation: evidence from Philadelphia* (2013). We rely on two sources of data for the project. First, we use publicly available sociodemographic and housing-market data for the six CMAs with populations over one million in 2016 (Montreal, Ottawa, Toronto, Calgary, Edmonton, and Vancouver), taken from the 2006 and 2016 Canadian census of population. The census includes a 100% coverage

"short-form" component and a 25% sample "long-form" component, and we use values enumerated at the census-tract scale. (Census tracts are statistical areas, usually of 2,500-8,000 residents, defined by Statistics Canada to approximate neighbourhoods). Because census tract boundaries change from census to census, we use a spatial tiling procedure to assemble lowest-common-denominator geographies from individual census tracts (von Bergmann, 2022). For example, if census tract 2006-A was split into tracts 2016-A and 2016-B, we use 2006-A. But if tracts 2006-A, 2006-B and 2006-C were re-allocated into two new, different tracts 2016-A and 2016-B, we combine them all into a single geography. This allows us to present exact values across multiple census periods without the need for error-prone spatial interpolation, which is commonly used to address this issue, at the cost of slightly larger units of analysis than would be possible with interpolation.

Our second data source is assessed dwelling values for all multi-family rental buildings in the City of Ottawa in 2008 and 2016, obtained from the Municipal Property Assessment Corporation (MPAC). This data comprises 2,063 separate observations across 1,329 postal addresses. In addition to the assessed values and postal addresses, the data contains a breakdown of the number of units of different bedroom counts in each building.

4. Methods

To assess the presence of discrimination in the Canadian housing market, we measure the relationship between relative concentration of racialized minorities and non-permanent residents on the levels and growth rates of residential property values and rents at the census-tract scale. We run six separate regressions in total. The four first regression models are mixed-effect linear regressions with CMA acting as a fixed effect. In these models, each CMA has a separate intercept to account for inter-regional variation in the outcome variable which isn't otherwise captured by the model's predictors. The fifth and sixth models, which look at multi-family properties, only look at data from Ottawa.

All the variables used in the models are detailed in Table 1. In all cases the variables are scaled as z-scores (distributions centred on 0 and with a standard deviation of 1). We are examining attributes that previous empirical research has found to be impacted by discrimination in housing markets and society at large.

Table 1: Variable definitions in all six regression models

Variable	Details
value_2016	Owner-occupied housing value in 2016
value_2006	Owner-occupied housing value in 2006 ($)
value_change_pct	Percent change in owner-occupied housing value between 2006 and 2016
rent_2016	Average residential rent paid in 2016
rent_2006	Average residential rent paid in 2006

rent_change_pct	Percent change in residential rent paid between 2006 and 2016
val_per_unit_2016	Average value of a unit in a multi-residential property with 7 or more self-contained units in 2016
val_per_unit_change	Percent change in the average value of a unit in a multi-residential property with 7 or more self-contained units between 2008 and 2016
rac_dis_ratio_2016	Measure of racial composition of racial minorities subject to systemic discrimination (Indigenous, Black, Arab, Filipino, Latino West Asian, South Asian) in 2016
rac_dis_ratio_change	Percentage change in the racial composition of racial minorities subject to systemic discrimination between 2006 and 2016
non_perm_ratio_2016	Measure of non-permanent residents in 2016
non_perm_ratio_change	Percentage change share of non-permanent residents between 2006 and 2016
income_2016	Median total income of households in 2016
detached_2016	Percentage of single detached homes in 2016
rooms_2016	Average number of rooms in 2016
p_children_2016	Percentage of children aged 0-17 as a percentage of individuals in private households
p_college_2016	Percentage of individuals between the ages of 25-64 with a postsecondary diploma, certificate or degree as their highest level of education
ph_dist	Distance to city hall or a similar relevant city-centre location in meters to act as spatial control in the model
poverty_2016	Prevalence of low income based on the "Low-income cut-offs, after tax" (LICO-AT) measure
rented_2016	Percent of residents who rent as opposed to own their dwelling in 2016
cityCalgary	Fixed effect for Calgary
cityEdmonton	Fixed effect for Edmonton
cityMontreal	Fixed effect for Montreal
cityOttawa	Fixed effect for Ottawa
cityToronto	Fixed effect for Toronto
cityVancouver	Fixed effect for Vancouver
bed_3	Percentage of multi-residential units which have three or more bedrooms.
n_2016	Number of multi-residential rental buildings with 7 or more self-contained units.
avg_units_2016	Average number of units per multi-residential rental building.
val_per_unit_2008	Average assessed building value per dwelling unit in 2008.

Table 2 summarizes key demographics for Canada and for the six selected CMAs from the 2016 census, while Table 3 provides summary statistics at the census-tract scale for all variables used in the models. Figures 1-4 display the spatial distributions of the two country-wide 2016 outcome variables (value_2016 and rent_2016) and predictor variables (rac_dis_ratio_2016 and non_perm_ratio_2016) for each of the six CMAs. Figure 5 displays the spatial distribution of per-unit multi-family assessed values in 2016 in Ottawa.

Table 2: Comparative demographics across selected CMAs, 2016

	Canada	Montréal	Toronto	Calgary	Edmonton	Ottawa - Gatineau	Vancouver
Population	35,152,000	4,099,000	5,928,000	1,393,000	1,321,000	1,324,000	2,463,000
Racialized minorities	19.8%	18.8%	35.4%	25.9%	26.0%	18.7%	24.8%
Non-permanent residents	1.5%	1.8%	2.3%	2.0%	2.2%	1.3%	3.2%
Average owner-occupied dwelling value	$443,100	$367,000	$734,900	$527,200	$437,500	$397,500	$1,005,900
Median household income	$70,340	$61,790	$78,370	$99,580	$94,450	$82,050	$72,660
Average rent	$1,002	$842	$1,264	$1,366	$1,292	$1,066	$1,242
Single-detached homes	53.6%	32.7%	39.6%	58.3%	57.3%	44.8%	29.4%
Individuals with a postsecondary degree	64.8%	70.4%	68.5%	69.6%	65.5%	72.1%	67.6%

Table 3: Summary statistics for all variables

Variable	Minimum	Maximum	Mean	Std. deviation
value_2016	0.00	3563977.00	610919.10	391619.93
value_2006	63729.00	1667072.00	350317.48	174913.22
value_change_pct	-1.00	2.15	0.68	0.30
rent_2016	0.00	3622.00	1164.88	349.24
rent_2006	392.00	2601.00	882.14	257.41
rent_change_pct	-1.00	6.47	0.34	0.25
rac_dis_ratio_2016	0.04	3.34	0.91	0.66
rac_dis_ratio_change	-1.53	2.33	-0.02	0.29
non_perm_ratio_2016	0.00	17.15	1.05	1.32
non_perm_ratio_change	-5.74	5.43	0.03	0.88
income_2016	17051.00	289792.00	78862.50	29386.01
detached_2016	0.00	22595.00	882.77	1164.63
rooms_2016	2.40	143.80	7.04	5.05
p_children_2016	0.02	0.41	0.19	0.05
p_college_2016	0.31	0.97	0.69	0.11
ph_dist	0.00	71728.23	14791.62	11462.95
poverty_2016	0.60	65.00	12.90	8.12
rented_2016	20.00	9175.00	808.66	759.38
val_per_unit_2016	-0.33	0.22	-0.10	0.09

val_per_unit_change	-2.22	3.73	-0.09	0.95
bed_3	0.00	1.00	0.21	0.26
n_2016	1.00	25.00	6.01	6.19
avg_units_2016	9.00	353.00	79.98	60.43
val_per_unit_2008	-2.46	4.67	-0.04	0.92

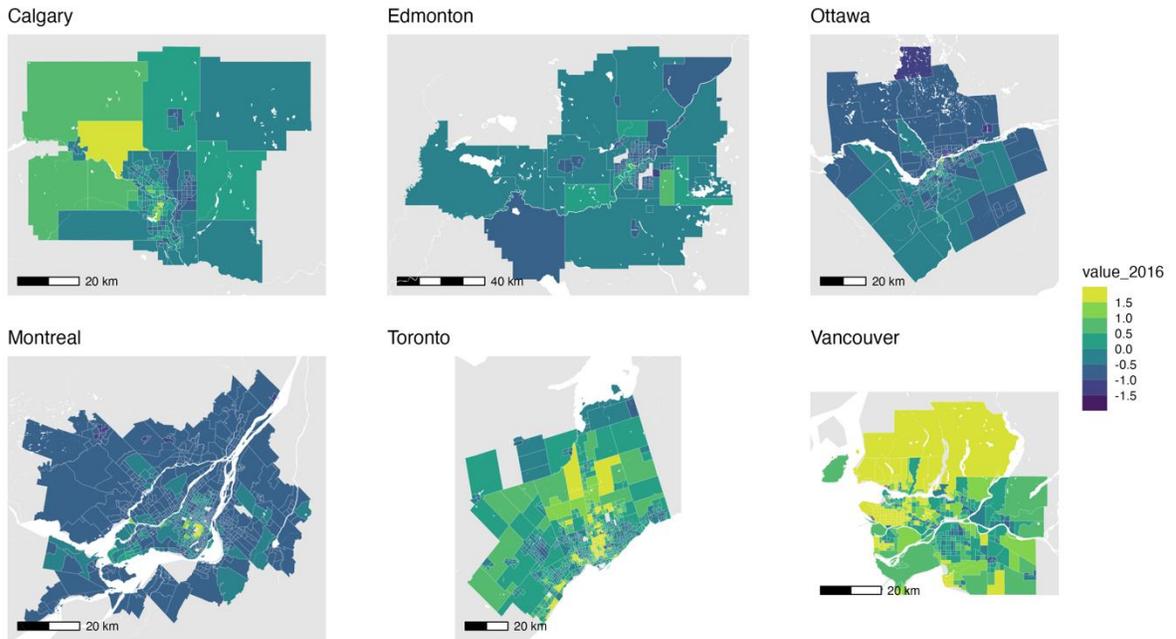*Figure 1. Owner-occupied housing value in 2016 (normalized)*

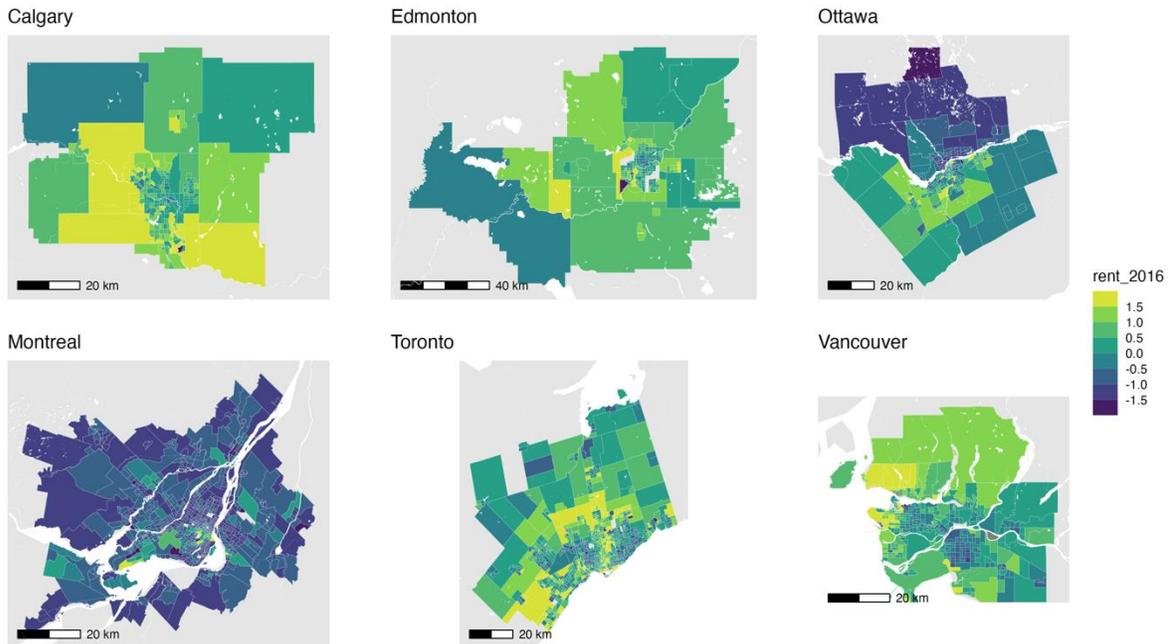*Figure 2. Average residential rent paid in 2016 (normalized)*

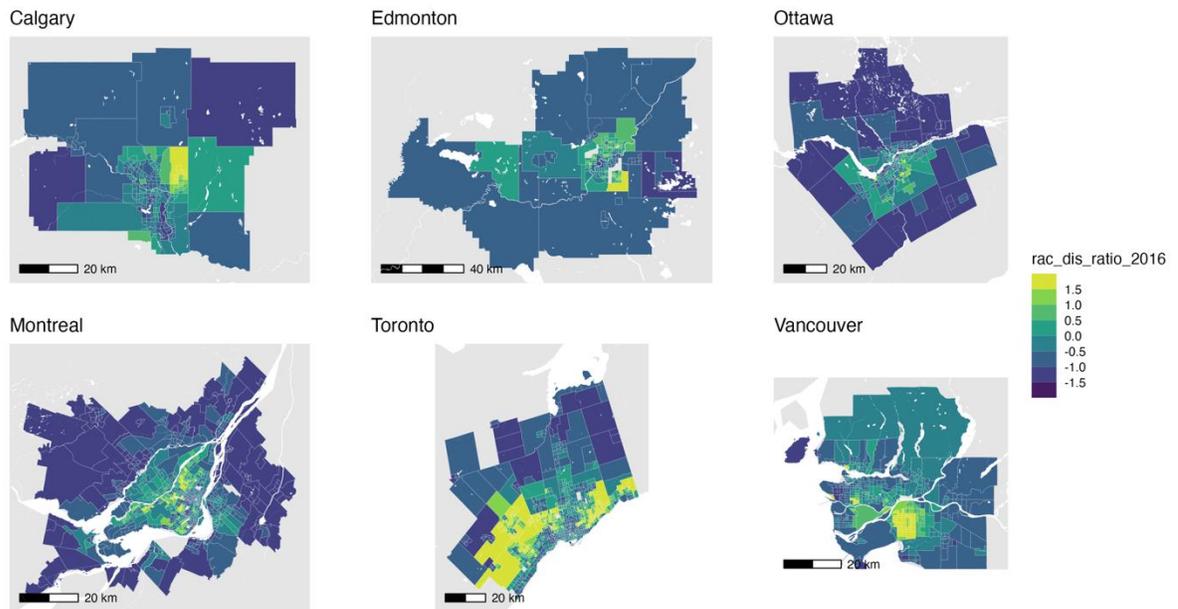*Figure 3. Proportion of racialized minorities in 2016 (normalized)*

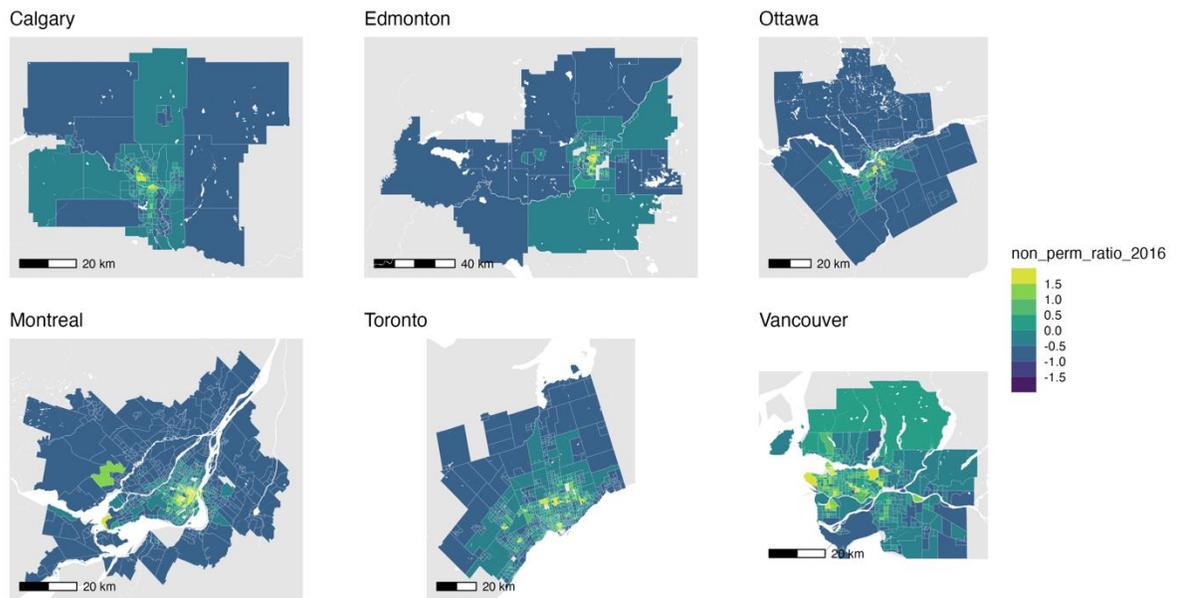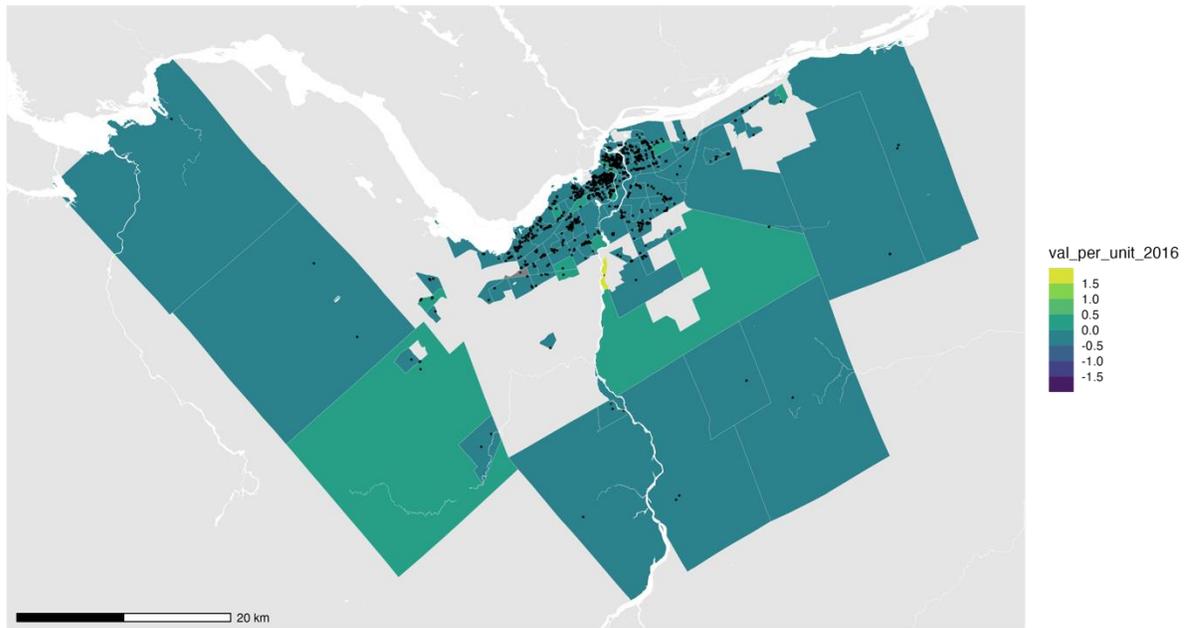*Figure 4. Proportion of non-permanent residents in 2016 (normalized)*

Figure 5. Average per-unit assessed dwellings values for multi-family rental buildings in 2016 (normalized)

The first specification of the model predicts housing values in 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract relative to the CMA.

$value_{2016} = \beta_1 rac\_dis\_ratio_{2016} + \beta_2 non\_perm\_ratio_{2016} + \beta_3 income_{2016} + \beta_4 detached_{2016} + \beta_5 rooms_{2016} + \beta_6 p\_children_{2016} + \beta_7 p\_college_{2016} + \beta_8 ph\_dist + \beta_9 poverty_{2016} + \beta_{10} rent_{2016} + \beta_{11} rented_{2016} + \gamma_1 cityMontreal + \gamma_2 cityOttawa + \gamma_3 cityToronto + \gamma_4 cityCalgary + \gamma_5 cityEdmonton + \gamma_6 cityVancouver + \epsilon_i$

The second specification of the model predicts the change in housing value between 2006 and 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract relative to the CMA.

$value\_change\_pct = \beta_1 value_{2006} + \beta_2 rac\_dis\_ratio_{2016} + \beta_3 non\_perm\_ratio_{2016} + \beta_4 income_{2016} + \beta_5 detached_{2016} + \beta_6 rooms_{2016} + \beta_7 p\_children_{2016} + \beta_8 p\_college_{2016} + \beta_9 ph\_dist + \beta_{10} poverty_{2016} + \beta_{11} rent_{2016} + \beta_{12} rented_{2016} + \gamma_1 cityMontreal + \gamma_2 cityOttawa + \gamma_3 cityToronto + \gamma_4 cityCalgary + \gamma_5 cityEdmonton + \gamma_6 cityVancouver + \epsilon_i$

The third specification of the model predicts residential rental values in 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract relative to the CMA.

$rent_{2016} = \beta_1 rac\_dis\_ratio_{2016} + \beta_2 non\_perm\_ratio_{2016} + \beta_3 income_{2016} + \beta_4 detached_{2016}$
$+ \beta_5 rooms_{2016} + \beta_6 p\_children_{2016} + \beta_7 p\_college_{2016} + \beta_8 ph\_dist + \beta_9 poverty_{2016} + \beta_{10} rented_{2016}$
$+ \gamma_1 cityMontreal + \gamma_2 cityOttawa + \gamma_3 cityToronto + \gamma_4 cityCalgary + \gamma_5 cityEdmonton$
$+ \gamma_6 cityVancouver + \epsilon_i$

The fourth specification of the model predicts the change in residential rental values between 2006 and 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract relative to the CMA.

$rent\_change\_pct = \beta_1 rent_{2006} + \beta_2 rac\_dis\_ratio_{2016} + \beta_3 rac\_dist\_ratio\_change$
$+ \beta_4 non\_perm\_ratio_{2016} + \beta_5 non\_perm\_ratio\_change + \beta_6 income_{2016} + \beta_7 detached_{2016}$
$+ \beta_8 rooms_{2016} + \beta_9 p\_children_{2016} + \beta_{10} p\_college_{2016} + \beta_{11} ph\_dist + \beta_{12} poverty_{2016} + \beta_{13} rented_{2016}$
$+ \gamma_1 cityMontreal + \gamma_2 cityOttawa + \gamma_3 cityToronto + \gamma_4 cityCalgary + \gamma_5 cityEdmonton$
$+ \gamma_6 cityVancouver + \epsilon_i$

The fifth specification of the model predicts the assessed value of a unit in a multi-family property in 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract.

$val\_per\_unit_{2016} = \beta_1 bed\_3 + \beta_2 n_{2016} + \beta_3 avg\_units_{2016}$
$+ \beta_4 rac\_dis\_ratio_{2016} + \beta_5 non\_perm\_ratio_{2016} + \beta_6 income_{2016} + \beta_7 detached_{2016} + \beta_8 rooms_{2016} +$
$\beta_9 p\_children_{2016} + \beta_{10} p\_college_{2016} + \beta_{11} ph\_dist + \beta_{12} poverty_{2016} + \beta_{13} rent_{2016} + \beta_{14} rented_{2016} +$
ϵ_i

The sixth specification of the model predicts the change in the assessed value of a unit in a multi-family property between 2008 and 2016 based on the ratio of the racial distribution and immigration status of residents in a census tract.

$val\_per\_unit\_change = \beta_1 bed\_3 + \beta_2 n_{2016} + \beta_3 avg\_units_{2016} + \beta_4 val\_per\_unit_{2008}$
$+ \beta_5 rac\_dis\_ratio_{2016} + \beta_6 non\_perm\_ratio_{2016} + \beta_7 income_{2016} + \beta_8 detached_{2016} + \beta_9 rooms_{2016}$
$+ \beta_{10} p\_children_{2016} + \beta_{11} p\_college_{2016} + \beta_{12} ph\_dist + \beta_{13} poverty_{2016} + \beta_{14} rent_{2016} + \beta_{15} rented_{2016}$
$+ \epsilon_i$

5. Results

Table 4: 2016 owner-occupied housing value

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
rac_dis_ratio_2016	-0.16639	0.01580	-10.531	< 2e-16	***
non_perm_ratio_2016	-0.02947	0.01740	-1.694	0.090354	.
income_2016	0.47453	0.02307	20.569	< 2e-16	***

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
detached_2016	0.05764	0.02354	2.449	0.014396	*
rooms_2016	-0.06200	0.02198	-2.820	0.004829	**
p_children_2016	0.06351	0.01650	3.848	0.000122	***
p_college_2016	0.06002	0.01808	3.320	0.000913	***
ph_dist	-0.26386	0.01579	-16.715	< 2e-16	***
poverty_2016	0.29519	0.02293	12.875	< 2e-16	***
rent_2016	0.17345	0.01704	10.176	< 2e-16	***
rented_2016	-0.06420	0.01460	-4.398	1.14e-05	***
cityCalgary	-0.76080	0.04647	-16.373	< 2e-16	***
cityEdmonton	-0.80617	0.04592	-17.557	< 2e-16	***
cityMontreal	-0.29868	0.02690	-11.102	< 2e-16	***
cityOttawa	-0.75807	0.03871	-19.581	< 2e-16	***
cityToronto	0.34326	0.02220	15.463	< 2e-16	***
cityVancouver	1.12741	0.03179	35.464	< 2e-16	***

Residual standard error: 0.5829 on 2806 degrees of freedom

Multiple R-squared: 0.6625

Adjusted R-squared: 0.6605

F-statistic: 324.1 on 17 and 2806 DF

p-value: < 2.2e-16

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Results from the above regression (Table 4) show that the relative concentration of racialized residents in a census tract in 2016 is strongly negatively predictive of 2016 owner-occupied housing values. The finding is strongly significant and identifies that a one standard-deviation increase in the ratio of racialized residents in a census tract decreases the predicted value of housing by 17%. Vancouver had vastly higher dwelling values after taking into account all the independent variables, and Toronto had substantially higher dwelling values. Dwelling values in Ottawa, Calgary and Edmonton were largely comparable.

Table 5: Change in value from 2006-2016: owner-occupied dwellings

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
value_2006	0.08021	0.02415	3.321	0.000909	***
rac_dis_ratio_2016	-0.25433	0.01997	-12.738	< 2e-16	***
non_perm_ratio_2016	0.03058	0.02269	1.348	0.177905	
income_2016	-0.14842	0.03337	-4.448	8.99e-06	***
detached_2016	0.14639	0.02961	4.945	8.08e-07	***
rooms_2016	-0.05203	0.02763	-1.883	0.059740	.

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
p_children_2016	0.05847	0.02078	2.814	0.004930	**
p_college_2016	0.04796	0.02280	2.104	0.035475	*
ph_dist	-0.25456	0.02047	-12.435	< 2e-16	***
poverty_2016	0.08319	0.03009	2.765	0.005730	**
rent_2016	0.03454	0.02168	1.593	0.111282	
rented_2016	-0.21716	0.01850	-11.736	< 2e-16	***
cityCalgary	-1.14732	0.05925	-19.366	< 2e-16	***
cityEdmonton	-0.18963	0.06139	-3.089	0.002028	**
cityMontreal	-0.53714	0.03421	-15.703	< 2e-16	***
cityOttawa	-0.79755	0.05120	-15.577	< 2e-16	***
cityToronto	0.60786	0.02857	21.273	< 2e-16	***
cityVancouver	0.87602	0.04592	19.078	< 2e-16	***

Residual standard error: 0.5829 on 2806 degrees of freedom

Multiple R-squared: 0.6625

Adjusted R-squared: 0.6605

F-statistic: 324.1 on 17 and 2806 DF

p-value: < 2.2e-16

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

The relative concentration of racialized residents in a census tract in 2016 significantly predicts a smaller increase in housing values between (Table 5). A one standard-deviation increase in the ratio of Black residents in a census tract in 2016 decreases the predicted owner-occupied housing value by 25.4%. Among all the demographic controls, the percentage of racialized residents in a census tract had the highest effect on the change in housing values. This finding highlights the financial incentive to reduce the concentration of racialized residents in a census tract to maximize the change in dwelling values.

Table 6: 2016 average rent

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
rac_dis_ratio_2016	- 0.029605	0.017468	-1.695	0.0902	.
non_perm_ratio_2016	0.112760	0.019056	5.917	3.67e-09	***
income_2016	0.340096	0.024647	13.799	< 2e-16	***
detached_2016	0.038702	0.026029	1.487	0.1372	
rooms_2016	0.034146	0.024310	1.405	0.1603	
p_children_2016	0.016533	0.018125	0.912	0.3618	
p_college_2016	0.221493	0.019515	11.350	< 2e-16	***
ph_dist	- 0.025436	0.017459	-1.457	0.1453	

poverty_2016	0.003413	0.024968	0.137	0.8913	
rented_2016	- 0.007547	0.016143	-0.468	0.6401	
cityCalgary	0.474757	0.050621	9.379	< 2e-16	***
cityEdmonton	0.399317	0.050235	7.949	2.70e-15	***
cityMontreal	- 0.741774	0.026212	-28.299	< 2e-16	***
cityOttawa	- 0.185593	0.042698	-4.347	1.43e-05	***
cityToronto	0.380312	0.023462	16.210	< 2e-16	***
cityVancouver	0.346093	0.034564	10.013	< 2e-16	***

Residual standard error: 0.645 on 2813 degrees of freedom

Multiple R-squared: 0.5861

Adjusted R-squared: 0.5838

F-statistic: 349 on 16 and 2813 DF

p-value: < 2.2e-16

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Here results show a negative relationship between the relative concentration of racialized residents in a census tract and average rent. This result is only significant at the 0.1 level. Unlike the two previous models, the ratio of non-permanent residents in a census tract has a lightly positive relationship with rent and is strongly statistically significant. This break from the trend where the presence of non-permanent residents was only weakly significant or not statistically significant to dwelling values, but had negative or null coefficients.

Table 7: Change in rent 2006-2016

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
rent_2006	- 1.3981385	0.0127986	- 109.242	< 2e-16	***
rac_dis_ratio_2016	0.0027684	0.0100902	0.274	0.78383	
rac_dis_ratio_change	- 0.0196273	0.0082453	-2.380	0.01736	*
non_perm_ratio_2016	- 0.0147216	0.0116601	-1.263	0.20685	
non_perm_ratio_change	0.0113826	0.0074563	1.527	0.12698	
income_2016	0.0890365	0.0154519	5.762	9.22e-09	***
detached_2016	0.0003884	0.0146801	0.026	0.97889	
rooms_2016	- 0.0056244	0.0137051	- 0.410	0.68156	
p_children_2016	- 0.0435420	0.0102536	-4.247	2.24e-05	***
p_college_2016	- 0.0110705	0.0114074	-0.970	0.33190	
ph_dist	0.0308585	0.0098861	3.121	0.00182	**
poverty_2016	0.0449551	0.0143429	3.134	0.00174	**
rent_2016	1.4619082	0.0136737	106.914	< 2e-16	***

rented_2016	- 0.0024540	0.0092701	-0.265	0.79124	
cityCalgary	0.0511237	0.0292082	1.750	0.08017	.
cityEdmonton	0.2033055	0.0297218	6.840	9.68e-12	***
cityMontreal	0.0608512	0.0170688	3.565	0.00037	***
cityOttawa	0.0174793	0.0243431	0.718	0.47279	
cityToronto	- 0.0229561	0.0146032	-1.572	0.11607	
cityVancouver	- 0.0157886	0.0198570	-0.795	0.42661	

Residual standard error: 0.3615 on 2784 degrees of freedom

Multiple R-squared: 0.8703

Adjusted R-squared: 0.8693

F-statistic: 933.8 on 20 and 2784 DF

p-value: < 2.2e-16

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

When measuring the impact on the change in rent between 2006 and 2016, the impact of the distribution of racial minorities was more significant than when measure against residential rental values in 2016. The coefficient for non-permanent residents was slightly negative, but the result was not statistically significant.

Table 8: Assessed value of multi-family buildings in Ottawa 2016

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
Intercept	-0.1348086	0.0216744	-6.220	3.06e-08	***
bed_3	0.1106730	0.0282807	3.913	0.000206	***
n_2016	-0.0002885	0.0022459	-0.128	0.898152	
avg_units_2016	0.0001980	0.0001316	1.505	0.136850	
rac_dis_ratio_2016	0.0365313	0.0233901	1.562	0.122775	
non_perm_ratio_2016	-0.0364841	0.0133234	-2.738	0.007800	**
income_2016	-0.0397350	0.0241359	-1.646	0.104121	
detached_2016	-0.0473019	0.0225066	-2.102	0.039130	*
rooms_2016	0.0398176	0.0234457	1.698	0.093832	.
p_children_2016	-0.0031395	0.0144242	-0.218	0.828324	
p_college_2016	0.0504141	0.0156986	3.211	0.001986	**
ph_dist	0.0208742	0.0201285	1.037	0.303232	
poverty_2016	0.0208742	0.0179975	1.053	0.295721	
rent_2016	0.1050126	0.0171370	6.128	4.46e-08	***
rented_2016	0.0001583	0.0196710	0.008	0.993600	

Residual standard error: 0.3615 on 2784 degrees of freedom

Multiple R-squared: 0.8703

Adjusted R-squared: 0.8693

F-statistic: 933.8 on 20 and 2784 DF

p-value: < 2.2e-16

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

In the context of Ottawa, there is a link between population precarity, measured as either the share of racialized minorities or non-permanent residents, and dwelling values. This regression for multi-residential properties with 7 or more self-contained units highlights that the proportion of non-permanent residents is negatively correlated with average values per unit. This highlights the financial incentive to reduce the number of recent immigrants without permanent residency in a given census tract.

Table 9: Change in multi-family assessed value 2008-2016

Variable	Coefficient	Std. Error	T Value	Pr(>|t|)	Significance
Intercept	-3.836e-01	2.577e-01	-1.488	0.141196	
bed_3	1.327e+00	3.344e-01	3.967	0.000173	***
n_2016	-1.115e-02	2.634e-02	-0.423	0.673395	
avg_units_2016	-5.117e-05	1.611e-03	-0.032	0.974750	
val_per_unit_2008	1.235e-01	1.141e-01	1.082	0.282782	
rac_dis_ratio_2016	4.655e-01	2.742e-01	1.697	0.094081	.
non_perm_ratio_2016	-3.874e-01	1.577e-01	-2.456	0.016540	*
income_2016	-2.020e-01	2.891e-01	-0.699	0.486923	
detached_2016	-2.600e-01	2.724e-01	-0.955	0.342992	
rooms_2016	2.246e-01	2.804e-01	0.801	0.425853	
p_children_2016	-8.935e-02	1.691e-01	-0.528	0.598999	
p_college_2016	5.237e-01	1.869e-01	2.802	0.006564	**
ph_dist	7.265e-02	2.387e-01	0.304	0.761748	
poverty_2016	2.447e-01	2.109e-01	1.160	0.249858	
rent_2016	7.714e-01	2.342e-01	3.294	0.001550	**
rented_2016	-5.534e-02	2.306e-01	-0.240	0.811086	

Residual standard error: 0.6848 on 70 degrees of freedom

Multiple R-squared: 0.5698

Adjusted R-squared: 0.4776

F-statistic: 6.181 on 15 and 70 DF

p-value: 5.026e-08

Note: Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Looking at the change in average per unit values in multi-residential properties between 2008 and 2016 also shows a negative impact between the presence of non-permanent residents and dwelling values, with weak significance.

6. Discussion and Conclusion

Results point strongly to the presence of racism within the Canadian housing market. This is demonstrated most prominently through the finding that a one standard-deviation increase in the relative concentration of visible minority residents in a census tract decreases predicted housing value and the rate at which housing value appreciates, controlling for structural disadvantage. In other words, differences in housing quality and neighbourhood characteristics do not explain the lower housing values seen in neighbourhoods with a greater proportion of visible minorities relative to the CMA as compared to those in neighbourhoods with a smaller concentration of visible minorities. What remains then as an explanatory factor for the observed difference is racism.

Results also point towards the presence of discrimination based on immigration status in the Ottawa housing market. Having a high concentration of non-permanent residents in a census tract relative to the average demographic concentrations within the city negatively predicts per unit multi-residential dwelling values and appreciation rates. The independent variables include in the regression models account for structural disadvantage; therefore the remaining unexplained difference can be attributed to discrimination based on immigration status.

In a financialized housing market, the relationship between race, immigration status and dwelling values creates a financial incentive to purchase property in a neighborhood with a high proportion of racialized and non-permanent residents, and then transform the demographic composition of the area. At an individual level, this kind of transformation is impossible, but asset management firms and other big players in the real estate market can achieve this kind of dramatic transformation. Profit maximizing firms operating in the best interest of their stakeholders, which includes shareholders in addition to tenants, are financially incentivized to reduce the concentration of racialized and non-permanent residents in properties they own and in census tracts in which they own real estate.

References

Archer, T., & Cole, I. (2021). "The financialization of housing production: exploring capital flows and value extraction among major housebuilders in the UK". *Journal of Housing and the Built Environment.* Vol. 36, pp. 1367-1387.

August, M. (2020). "The financialization of Canadian multi-family rental housing: From trailer to tower". *Journal of Urban Affairs.* Vol. 42(7), pp. 975-997.

August, Martine. (2022). "The financialization of multi-family rental housing in Canada: A Report for the Office of the Federal Housing Advocate". The Office of the Federal Housing Advocate.

Brinson, G.P., Diermeier, J.J., & Schlarbaum, G.G. (1986). « A composite portfolio benchmark for pensions plans". Financial Analyst Journal. Vol. 42, no. 2, pp. 15-24.

Canadian Apartment Properties Real Estate Investment Trust. 2000. Annual report: Apartments make Money.

Canadian Mortgage and Housing Corporation. (2021). The Financialization of Housing.

Charles, S.L. (2019). "The financialization of single-family rental housing: an examination of real estate investment trusts' ownership of single-family houses in the Atlanta metropolitan area". *Journal of Urban Affairs.* 42(5): 1–21.

Deghi, A., Mok, J. & Tsuruga, T. (2021). "Commercial Real Estate and Macrofinancial Stability During COVID-19" International Monetary Fund: Working Paper No. 2021/264.

Fabozzi, F., Gupta, F., & Markowitz, H. M. (2002). "The Legacy of Modern Portfolio Theory". *The Journal of Investing.* Vol.11 (3) 7-22; DOI: 10.3905/joi.2002.319510

Fields, D. (2018). "Constructing a new asset class: property led financial accumulation after the crisis". Economic Geography 94(2): 118–140.

Fields, D., & Raymond, E. L. (2021). "Racialized geographies of housing financialization". *Progress in Human Geography.*

Howell, J., & Korver-Glenn, E. (2020). "The Increasing Effect of Neighbourhood Racial Composition on Housing Values". Social Problems.

Lewis, Nemoy. 2022. The uneven racialized impacts of financialization: A report for the Office of the Federal Housing Advocate. The Office of the Federal Housing Advocate.

Lima, V. (2020). "The financialization of rental housing: Evictions and rent regulation". *Cities.* Vol. 105.

Ling, D.G. & Naranjo, A. (2002). "Commercial real estate return performance: a cross-country analysis". Journal of Real Estate Finance and Economics. Vol. 24, no. 1-2, pp. 119-142.

Markowitz, H. (1987). Mean–variance analysis in portfolio choice and capital markets. New York: Basil Blackwell.

Obeng Gyimah., et al. (2005). "Ethnicity, Immigration and Housing Wealth in Toronto". *Canadian Journal of Urban Research.*

Perry, A. (2019). "Know Your Price: The Devaluation of Residential Property in Black Neighborhoods" The Brookings Institute.

von Bergmann J (2022). *tongfen: Make Data Based on Different Geographies Comparable*. R package version 0.3.5, <https://CRAN.R-project.org/package=tongfen>.

Zaimovic, A. Omanovic, A., Arnaut-Berilo, A. (2021). "How Many Stocks Are Sufficient for Equity Portfolio Diversification? A Review of the Literature". Journal of Risk and Financial Management. Vol. 14, no. 551, pp. 1-30.

Zhang, B. (2020). "Social policies, financial markets and the multi-scalar governance of affordable housing in Toronto". *Urban Studies.* Vol. 57(13), pp. 2628-2645.