Online Appendix

Table OA-1. Regressions of Housing Completions on Local Regulation and Approval Delay Indices – All Completions

VARIABLES	Housing Completions (% Dwellings)	
	(1)	(2)
Regulation Index (2021=Fixed)	-0.004*	
	(0.002)	
Approval Delay Index (2021=Fixed)		-0.001
		(0.001)
BCPI (%)	-0.009	-0.010
	(0.007)	(0.006)
Immigrants-to-Pop (%)	0.000	-0.001
	(0.005)	(0.005)
NonPRs-to-Pop (%)	-0.013	-0.014
	(0.009)	(0.009)
ln(Pop)	0.141***	0.130***
	(0.043)	(0.041)
ln(Median Income)	0.389***	0.323***
	(0.086)	(0.106)
Unemployment Rate (%)	-0.028***	-0.019**
	(0.010)	(0.008)
HH Size	0.039	0.046
	(0.179)	(0.175)
Couples with No Child-to-HHs (%)	0.031***	0.026***
	(0.006)	(0.005)
Bachelor Degrees-to-Pop (%)	0.001	0.004
	(0.005)	(0.005)
Constant	Yes	Yes
YearQ FE	Yes	Yes
# of Census Division-YearQs	320	320
Adj. R-squared	0.230	0.228

The table reports regression results for housing completions on the local regulation index and the approval delay index, by census division, from Q1-2017 to Q1-2025. It corresponds to the full regression outputs shown in Panel A of Figure 1 in the main report. Variable definitions are provided in the main report. Robust standard errors are reported in parentheses. Statistical significance is indicated as follows: * p<0.1; ** p<0.05; *** p<0.01.

Table OA-2. Regressions of Housing Completions on Local Regulation and Approval Delay Indices – Apartment and Single-Family Completions

VARIABLES	Housing Completions (% Dwellings)			
	Apartment		Single-Family	
	(1)	(2)	(3)	(4)
Regulation Index (2021=Fixed)	0.001		-0.002***	
	(0.002)		(0.001)	
Approval Delay Index (2021=Fixed)		0.001		-0.001***
		(0.001)		(0.000)
Immigrants-to-Pop (%)	0.005	0.005	-0.005***	-0.005***
	(0.003)	(0.003)	(0.002)	(0.002)
NonPRs-to-Pop (%)	-0.009	-0.009	-0.002	-0.002
	(0.008)	(0.008)	(0.003)	(0.003)
ln(Pop)	0.040	0.035	0.051***	0.049***
	(0.027)	(0.027)	(0.014)	(0.014)
ln(Median Income)	-0.097	-0.050	0.187***	0.130***
	(0.074)	(0.088)	(0.026)	(0.028)
Unemployment Rate (%)	-0.009	-0.010	-0.010***	-0.006**
	(0.008)	(0.006)	(0.003)	(0.002)
HH Size	-0.405***	-0.359***	0.385***	0.362***
	(0.125)	(0.129)	(0.061)	(0.057)
Couples with No Child-to-HHs (%)	0.010**	0.010**	0.012***	0.009***
	(0.005)	(0.004)	(0.002)	(0.001)
Bachelor Degrees-to-Pop (%)	0.003	0.001	-0.004**	-0.002
	(0.004)	(0.004)	(0.002)	(0.002)
Constant	Yes	Yes	Yes	Yes
YearQ FE	Yes	Yes	Yes	Yes
# of Census Division-YearQs	320	320	320	320
Adj. R-squared	0.313	0.319	0.610	0.627

The table reports regression results for housing completions on the local regulation index and the approval delay index, by census division, from Q1-2017 to Q1-2025, separately for apartment and single-family completions. Columns (1) and (2) correspond to the full regression results presented in Panel B of Figure 1 in the main report, while Columns (3) and (4) correspond to those in Panel C. Variable definitions are provided in the main report. Robust standard errors are reported in parentheses. Statistical significance is denoted by: * p<0.1; ** p<0.05; *** p<0.01.

Table OA-3. Regressions of Housing Completions on BCPI – All Completions

VARIABLES	Housing Completions (% Dwellings)		
	(1)	(2)	(3)
BCPI (%)	-0.011		
	(0.007)		
BCPI (Metal) (%)		-0.016***	
		(0.005)	
BCPI (Wood and Plastics) (%)			-0.003*
			(0.002)
Immigrants-to-Pop (%)	-0.003	-0.004	-0.003
	(0.005)	(0.005)	(0.005)
NonPRs-to-Pop (%)	-0.014	-0.012	-0.013
	(0.009)	(0.009)	(0.009)
ln(Pop)	0.115***	0.132***	0.119***
	(0.038)	(0.038)	(0.038)
ln(Median Income)	0.390***	0.420***	0.390***
	(0.086)	(0.086)	(0.086)
Unemployment Rate (%)	-0.017**	-0.020**	-0.017**
	(0.008)	(0.008)	(0.008)
HH Size	0.142	0.170	0.171
	(0.187)	(0.186)	(0.185)
Couples with No Child-to-HHs (%)	0.024***	0.026***	0.025***
	(0.005)	(0.005)	(0.005)
Bachelor Degrees-to-Pop (%)	0.001	0.001	0.001
	(0.005)	(0.005)	(0.005)
Constant	Yes	Yes	Yes
YearQ FE	Yes	Yes	Yes
# of Census Division-YearQs	320	320	320
Adj. R-squared	0.221	0.236	0.220

The table reports regression results for housing completions on the building construction pricing index (BCPI), by census division, from Q1-2017 to Q1-2025. It corresponds to the full regression outputs shown in Panel A of Figure 2 in the main report. Variable definitions are provided in the main report. Robust standard errors are reported in parentheses. Statistical significance is indicated as follows: * p<0.1; ** p<0.05; *** p<0.01.

Table OA-4. Regressions of Housing Completions on BCPI – Apartment and Single-Family Completions

VARIABLES	Housing Completions (% Dwellings)					
	Apartment			Single-Family		
	(1)	(2)	(3)	(4)	(5)	(6)
BCPI (%)	-0.013**			-0.002		
	(0.006)			(0.002)		
BCPI (Metal) (%)		-0.011**			-0.004***	
		(0.004)			(0.002)	
BCPI (Wood and Plastics) (%)			-0.003*			-0.000
			(0.002)			(0.001)
Immigrants-to-Pop (%)	0.005*	0.004	0.005	-0.006***	-0.007***	-0.007***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
NonPRs-to-Pop (%)	-0.009	-0.006	-0.007	-0.003	-0.002	-0.002
	(0.008)	(0.008)	(0.008)	(0.003)	(0.003)	(0.003)
ln(Pop)	0.045*	0.060**	0.050**	0.036***	0.040***	0.037***
	(0.025)	(0.025)	(0.025)	(0.013)	(0.013)	(0.013)
ln(Median Income)	-0.098	-0.083	-0.105	0.187***	0.196***	0.188***
	(0.074)	(0.075)	(0.074)	(0.026)	(0.026)	(0.026)
Unemployment Rate (%)	-0.012*	-0.014**	-0.013*	-0.003	-0.004	-0.003
	(0.006)	(0.007)	(0.007)	(0.002)	(0.002)	(0.002)
HH Size	-0.427***	-0.387***	-0.392***	0.442***	0.444***	0.447***
	(0.132)	(0.134)	(0.132)	(0.060)	(0.059)	(0.059)
Couples with No Child-to-HHs (%)	0.011***	0.012***	0.011***	0.008***	0.009***	0.008***
	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Bachelor Degrees-to-Pop (%)	0.003	0.003	0.004	-0.004**	-0.004**	-0.004**
	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
YearQ FE	Yes	Yes	Yes	Yes	Yes	Yes
# of Census Division-YearQs	320	320	320	320	320	320
Adj. R-squared	0.314	0.319	0.311	0.590	0.599	0.590

The table reports regression results for housing completions on the building construction pricing index (BCPI), by census division, from Q1-2017 to Q1-2025, separately for apartment and single-family completions. Columns (1), (2), and (3) correspond to the full regression results presented in Panel B of Figure 2 in the main report, while Columns (4), (5), and (6) correspond to those in Panel C. Variable definitions are provided in the main report. Robust standard errors are reported in parentheses. Statistical significance is denoted by: * p<0.1; ** p<0.05; *** p<0.01.

Table OA-5. Instrumental-Variable Regression of ln(Median Price) on Housing Completions

VARIABLES	First Stage		Second Stage
	Housing Completions	Squared Housing Completions	ln(Median Price)
	(1)	(2)	(3)
Housing Completions (lagged)	-0.374	-0.950**	3.037***
	(0.367)	(0.473)	(1.068)
Squared Housing Completions (lagged)	0.678*	1.341**	-2.011***
	(0.407)	(0.538)	(0.722)
BCPI (%)	-0.006	-0.003	
	(0.014)	(0.014)	
BCPI (Metal) (%)	-0.014***	-0.017***	
	(0.006)	(0.006)	
BCPI (Wood and Plastics) (%)	0.000	0.000	
	(0.005)	(0.004)	
Immigrants-to-Pop (%)	-0.002	-0.003	0.060***
	(0.004)	(0.004)	(0.007)
NonPRs-to-Pop (%)	-0.006	-0.005	0.066***
	(0.009)	(0.010)	(0.014)
ln(Pop)	0.100***	0.098***	-0.192**
	(0.035)	(0.035)	(0.076)
ln(Median Income)	0.390***	0.331***	-0.090
	(0.094)	(0.096)	(0.266)
Unemployment Rate (%)	-0.014*	-0.013	-0.011
	(0.008)	(0.008)	(0.019)
HH Size	0.049	0.112	-2.268***
	(0.178)	(0.186)	(0.321)
Bachelor Degrees-to-Pop (%)	0.000	0.001	0.037***
	(0.004)	(0.005)	(0.007)
Couples with No Child-to-HHs (%)	0.020***	0.018***	0.007
	(0.005)	(0.006)	(0.014)
Constant	Yes	Yes	Yes
YearQ FE	Yes	Yes	Yes
# of Census Division-YearQs	301	301	301
Adj. R-squared	0.318	0.332	0.774

The table reports instrumental variable regression results for the natural logarithm of median house price on housing completions, by census division, from Q1-2017 to Q1-2025. It corresponds to the full regression outputs shown in Figure 3 of the main report. Columns (1) and (2) present the first-stage regression results for the instrumented variables: housing completions and squared housing completions. Column (3) presents the second-stage regression of the natural logarithm of median house price on the fitted values of housing completions and squared housing completions obtained from Columns (1) and (2). Variable definitions are provided in the main report. Robust standard errors are reported in parentheses. Statistical significance is denoted by: * p<0.1; ** p<0.05; *** p<0.01.

Model Explanation for the AI-Driven Rental Projections

We project future rents using a neural network model. The neural network model implemented in this project is a Multi-Layer Perceptron (MLP) Regressor. This type of neural network is particularly suited for regression tasks, making it ideal for predicting continuous values. We use the Adam optimizer to minimize the loss function, which measures the difference between the predicted and actual values.[1] Additionally, an L2 regularization term is included to prevent overfitting, promoting better generalization to new, unseen data. The MLP Regressor iteratively adjusts its parameters in the layers to improve its predictive accuracy in training. After training, we use the model to project future median prices by census metropolitan area for the years between 2025 and 2032 using government immigration projections released on January 21, 2025.

We mainly use the projections on population, the number of immigrants, the number of non-permanent residents, that are reported by province. Within province, we distribute the values for these demographic variables using census metropolitan level ratios:

$$Demographic\ Ratio_{i,t} = \frac{DemographicVariable_{i,2021} * (1 + g_{jt}^{DemographicVariable})}{Population_{i,2021}(1 + g_{jt}^{Population})} \tag{1}$$

where demographic variables are the number of immigrants and the number of non-permanent residents for census metropolitan area i in province j. We project each demographic ratio for census metropolitan area i for years t, 2025 to 2031 and we use actual demographic ratio for 2024 to predict median price for the years between 2025 and 2032. g_{jt} for population and demographic variables are the growth rates for years t, 2025 to 2031 calculated relative to the values in 2021. We use the government projections for the values for years t, 2025 to 2031 released on January 21, 2025.[2] This approach simply assumes that

[1] For more details, please see https://arxiv.org/abs/1412.6980.

[2] For more details, please visit the hyperlink: Population Projections for Canada (2024 to 2074)

new immigrants to each province will mainly spread across census metropolitan areas based on the historical immigrant ratios in each census metropolitan area within each province.

We use best predictors that we obtain from the linear model in Table OA-5 as our input variable for our neural network. We project input variables that has a component of population, immigration and non-permanent resident. We calculate growth rate based on the growth of the components. For other variables with no projection components, we assume constant growth using historical data.