LOCAL CONDITIONS AND THE PREVALENCE OF HOMELESSNESS IN CANADA

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SUMMARY

In 2018, the federal government coordinated point-in-time counts in 61 Canadian communities. These counts, all conducted over the course of a few nights during the months of March and April, revealed that 25,216 people were experiencing homelessness. Of those, 20,803 slept in emergency shelters while 4,481 slept on the streets, in cars, or in some other unsuitable place.

Reviewing the data for 49 of those 61 communities, this paper examines the impact of community-level conditions on the prevalence of homelessness. The structural determinants of both sheltered and unsheltered homelessness are examined. The analysis shows that more expensive low-quality rental units have a strong positive relationship with the numbers of people staying in homeless shelters. A higher percentage of people in a community living in poverty is also related to increased numbers of people having to make use of homeless shelters. Increases in social assistance income, which undoubtedly improved the well-being of recipients, had no significant relationship with the number of people experiencing homelessness. This latter result is consistent with individuals and families with low income having a small income elasticity of housing demand. For these individuals and families, marginal additions to income are first used to relieve constraints on their budgets for food, utilities, and other necessities rather than being used to finance improvements in

housing conditions. The fraction of the population that self-identifies as Indigenous is positively related to both sheltered and unsheltered homelessness, a result consistent with claims of discrimination in housing markets. Finally, a milder climate is associated with higher numbers of people experiencing unsheltered homelessness.

These results suggest the most effective policy response to addressing homelessness is to lower the cost of shelter, an outcome best achieved by increasing the supply of shelter that can be afforded by individuals and families with limited income. To this end, public policies directed toward reducing the cost of construction, policies that include reviewing density restrictions and land-use regulations and offering tax incentives, can be effective. Preventing the disappearance of single-room occupancy hotels, boarding houses, trailer parks and other forms of housing affordable to people with limited income are other policy responses likely to be associated with decreases in homelessness. Increasing the stock of government-owned housing is another policy option, one best suited for providing housing for people whose homelessness is caused or exacerbated by disability, mental illness, substance abuse or other health issues requiring other support services. Marginal increases in income support, while important for increasing the well-being of individuals and families with limited income, are unlikely to be associated with decreases in homelessness unless they are sufficiently large to significantly reduce rates of poverty in the community.

INTRODUCTION

According to recent estimates (ESDC 2019a), on an average night in 2016, over 14,000 people slept in an emergency homeless shelter in Canada. In that year, approximately 129,000 Canadians stayed at least one night in an emergency shelter. This number is relatively easy to determine because providers know the number of people sleeping in their shelters each night. But many more people than this experience homelessness. Their experience with homelessness means sleeping rough on the street or in locations unfit for human habitation. This latter group of people, those experiencing what is referred to as unsheltered homelessness, is rather more difficult to enumerate. An accurate count of the number of people experiencing homelessness is difficult for this reason.

This is problematic because knowing the number of people experiencing homelessness is essential if only to understand the appropriate scale of the required response to the issue. But it is also important to understand how people experience homelessness and the reasons for their homelessness. Hail-Jares et al. (2020), for example, reveal that youth who use emergency shelters differ from those whose experience involves unsheltered homelessness. They differ in terms of the causes of their homelessness and the potential effectiveness of interventions designed to help them re-establish housing.

Fortunately, Employment and Social Development Canada (ESDC) has in recent years funded two nationally co-ordinated point-in-time counts of people experiencing homelessness across Canada. Point-in-time counts make use of administrative data provided by shelter operators and the efforts of volunteers to canvass people identified as sleeping without shelter on the street or in locations unfit for human habitation. Co-ordinating a point-in-time count in 61 communities across Canada in 2018, the ESDC has produced a picture of sheltered and unsheltered homelessness in Canada. This effort is important because studies of how local community conditions influence homelessness typically rely on cross-section data describing homelessness across many communities measured on, or nearly on, the same date.[1] This area of research has had to rely on data from the U.S. where the federal Department of Housing and Urban Development (HUD) has since 2007 enabled annual point-in-time counts produced by communities and counties in all 50 states. Relying on results drawn from examinations of U.S. data is less than ideal since programs of social assistance, rates of poverty and demographics are noticeably different in Canada from what they are in the U.S., and we might expect these factors to play a role in explaining community differences in the number of people experiencing homelessness.[2] ESDC's effort to make national point-in-time count data available is therefore important for bettering our understanding of homelessness in Canada.

Two broad approaches have been taken to identify the causes of homelessness. One is to focus on the individual. This approach emphasizes homelessness as being the result

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[1]   A time series analysis examination of what community characteristics influence rates of homelessness requires a community to produce a sufficiently large number of point-in-time counts. Calgary has only produced 14 point-in-time counts since 1992 and is the longest time series we know of.

[2]   See, for example, Benjaminsen and Andrade (2015), who examine how homeless shelter use varies by the size and design of welfare support systems.

of disability, mental illness, adverse childhood experiences, substance abuse and health and income shocks suffered by the individual. The other approach is to emphasize homelessness as being the result of the characteristics of the community in which people reside. Thus, the availability of affordable housing, labour market conditions, the generosity of social supports and demographic variables impacting one's ability to retain housing are identified as candidates for explaining why people experience homelessness.

The individual- and community-level determinants of homelessness are not, of course, mutually exclusive. As O'Flaherty (2019) notes, negative events might select an individual for homelessness, but community-level effects can lessen or magnify the consequences of those events. Community characteristics are important for understanding why an individual with a disability or dealing with mental health challenges also experiences homelessness. It is important to identify both the individual and the community conditions that result in homelessness and in this way, provide policy-makers with a complete menu of policy choices.

This paper makes use of the 2018 national point-in-time count data provided by ESDC to identify local community conditions associated with the prevalence of homelessness in Canada. In the next section, we review the literature on why the number of people experiencing homelessness might vary by geographic location and summarize the evidence drawn from studies using U.S. data. In the section following that, we describe the data that have been made available to us and the dataset we have constructed to determine the structural determinants of homelessness in Canada. An empirical model is then defined and tested. We conclude with a discussion of the implications of our empirical results for public policies aimed at reducing homelessness.

LITERATURE REVIEW

The availability of rich datasets on PIT counts in the U.S. and the lack of similar data for other countries mean that the literature on the structural causes of sheltered and unsheltered homelessness is limited to describing and quantifying the U.S. experience. As noted above, this is problematic for researchers and policy-makers in different countries because there are important differences between countries in the design of social assistance programs, rates of poverty and demographic variables — all considerations that may impact the sensitivity of rates of homelessness to structural determinants. Our focus in reviewing this literature, then, is not to identify the size of empirical sensitivities but rather to summarize what has been published about the structural determinants of homelessness.

Contributions to the empirical literature on the structural determinants of homelessness have emphasized the relevance of four broad factors describing local communities: the state of the housing market, demographic composition, economic conditions and the generosity of the social safety net. Less often, studies have also considered the role of weather conditions.

The state of the local housing market is frequently identified as a statistically significant determinant of local homelessness. An early study by Honig and Filer (1993) used

measures of homelessness for 50 metropolitan areas in the U.S. They found that the size of rents at the 10th percentile of the rental distribution for apartments had the greatest impact on the incidence of homelessness. Their empirical estimates suggest that an increase of one standard deviation of rents would result in an increase in the homelessness rate 42 per cent above the mean. Thus, they conclude, a reduction in rents stemming from an increase in the supply of low-priced rentals or an increase in rent subsidies would have a dramatic effect on homelessness.

Quigley et al. (2001) found that the prevalence of homelessness, defined as the fraction of the population experiencing homelessness, was sensitive to the cost of rental housing relative to income. As they note, the sensitivity of homelessness to the rent-to-income ratio is consistent with homelessness being a rational choice among individuals in the extreme lower tail of the income distribution. Once housing costs become large enough relative to income, abandoning housing and redirecting limited income toward maintaining food security and other basic needs becomes a rational choice. They conclude that even modest policies directed toward reducing the rent-to-income ratio — be they income supports directed toward the very poor or housing supply policies intended to reduce the cost of providing low-end housing — can have substantial effects on the prevalence of homelessness.

More recent work investigating the sensitivity of homelessness to the state of the housing market has taken advantage of a concerted effort that the Department of Housing and Urban Development (HUD) in the U.S. made to co-ordinate point-in-time counts. There is now a wealth of data on point-in-time counts produced by communities and counties in all 50 states since 2005.[3] Studies using this panel data of point-in-time counts have supported Quigley et al.'s earlier conclusions that measures of housing affordability are key for determining the prevalence of homelessness. Glynn and Fox (2019), for example, use homeless counts from the 25 largest U.S. metropolitan areas to investigate the relationship between a rent index and increases in the number of people counted as homeless. They find the rent-to-income ratio to be a positive determinant of the prevalence of homelessness and that the sensitivity of homelessness to the rent-to-income ratio varies by city. Fargo et al. (2013) report homelessness to be positively related to the number of households whose rent-to-income ratio exceeds 30 per cent. In their reviews of empirical studies, Byrne et al. (2013) and Hanratty (2017) confirm that a significant positive relationship between homelessness and rent is the most consistent housing market finding in research relating homelessness to local conditions.

The role of the social safety net in determining local homelessness has typically been measured by the percentage of households in the community experiencing poverty. Where direct measures of income are used, community median income — rather than measures of the income of those most at risk of homelessness — is the most frequently used income measure in U.S. studies. The inference is that as median income rises, the greater is the proportion of the population left in the lower end of the income distribution and so they are at greater risk of homelessness. Hanratty (2017)

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3   See the HUD Exchange Point-in-Time Count and Housing Inventory Count, https://www.hudexchange.info/programs/hdx/pit-hic/.

reports that few studies find that this measure of the percentage of the community experiencing poverty has a measurable effect on homelessness. Measures of the welfare income available to people in the community are similarly found to be an insignificant determinant of homelessness in U.S. studies.

A community's demographic composition is hypothesized to influence the number of people experiencing homelessness because of the possibility that certain demographics might encounter housing discrimination or suffer skill mismatches in the labour market, leading to higher incidences of poverty. In U.S. studies, the fraction of the community population that is Black or Hispanic is frequently used to test this hypothesis.[4] Lee et al. (2003) suggest a similar logic implies that communities with a greater proportion of single-person households may also experience a higher prevalence of homelessness because they lack the income security of a second income-earner or may face discrimination from landlords over the characteristics that select them into single status — old age, youthfulness or personal problems. In their empirical analysis, they find this variable, and the level of rent, to have the strongest statistically significant impacts on local homelessness.

Local economic conditions have been proxied by variables such as local unemployment rates and the fraction of the population that has poverty-level incomes. The reviews of empirical studies by Byrne et al. (2013) and Hanratty (2017) show variables like these have little independent influence on local homelessness and are dominated by measures of poverty and the cost of housing.

A measure of climate has been included as an independent variable in empirical studies less consistently than measures of housing market conditions, demographic variables, local economic conditions and measures of the social safety net. As Lee et al. (2003) note, this is curious since well-documented studies show that the subsistence strategies of people experiencing homelessness, from rough sleeping to panhandling and casual labour, are clearly climate dependent. Byrne et al. (2013) note that in studies that include these measures, milder temperatures and less precipitation are associated with more homelessness. The usual explanation for this association is that in communities with milder climates, people experiencing homelessness have a viable option for subsistence and sleeping not available in communities with less hospitable climates. In a recent paper, Corinth and Lucas (2018) focus on the role of climate as a determinant of the prevalence of homelessness in the U.S. and find that variation in the prevalence of unsheltered homelessness is higher in communities with mild climates. They stress that future research needs to carefully account for climate when investigating the local determinants of homelessness.

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[4]
    Lee et al. (2003) note that in U.S. studies, Hispanics are often found to be less vulnerable to homelessness than African-Americans. Baker (1996) suggests this is due to Hispanics as a group being more inclined to use other non-traditional housing arrangements (doubling-up, for example) to avoid unsheltered homelessness. Corinth and Lucas (2018) identify local differences in the prevalence of homelessness according to measures of religiosity. Using Canadian data, Tanasescu and Smart (2010) show immigrants are less likely than native-born to experience homelessness. Differences in culture may therefore also play a role in explaining a higher prevalence of homelessness among identifiable groups. Finally, O'Flaherty (2019) notes that in the U.S., African-Americans are more likely than other identifiable groups to experience incarceration, which hampers employment, and which he speculates might make landlords hesitant to rent to them.

Other issues in this literature include recognizing that the experience and the determinants of homelessness may differ in metropolitan and non-metropolitan communities and may also differ for single people as opposed to families. For example, in their empirical analysis, Fargo et al. (2013) confirm the frequently cited finding that measures of rent play a key role in explaining the prevalence of homelessness for both families and single adults, but they find that safety net and demographic variables play more important roles in explaining homelessness for single adults than families. They also report fewer factors associated with the prevalence of homelessness for either families or single adults outside of metropolitan areas. Byrne et al. (2013) similarly find rent to be an important predictor of homelessness in both metropolitan and non-metropolitan communities but other variables vary in significance by type of community.

THE POINT-IN-TIME COUNT DATA

In Canada, the availability of data is rather more limited than it is in the U.S. Employment and Social Development Canada (ESDC) has recently made possible two nationally co-ordinated point-in-time counts across Canada, first in 2016 and then again in 2018. The 2016 count involved 32 communities. In 2018, a larger effort involved 61 communities, all conducting point-in-time counts on a single night between March 1 and April 30.[5] We use the data from the 2018 count, as it is the larger and more complete of the two counts.[6]

Data from the 2018 count enumerate people experiencing homelessness on the night of the count who were identified as *unsheltered* and *sheltered*. Unsheltered means a person who was counted outside or who was found to be spending the night sleeping in a vehicle or an abandoned building. Someone identified as sheltered was enumerated in an emergency shelter, a domestic violence shelter, short-term transitional housing or an extreme-weather shelter. Data on the number of sheltered people were usually provided by shelter operators and so were based on administrative data. ESDC (2019a) reports that a total of 25,216 people across the 61 communities participating in the count were enumerated as experiencing sheltered (20,803) or unsheltered (4,481) homelessness.

Our sample contains 49 of those 61 communities. One observation was lost because in the data provided to us, the point-in-time counts for Charlottetown and Summerside, P.E.I. were combined. We did not include point-in-time counts available for Whitehorse, Yellowknife and Iqaluit because data were lacking on relevant independent variables. Finally, due to a lack of permission to use their data, our sample does not include the point-in-time counts for Vancouver or for communities in Quebec (Montreal,

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[5] A similar count was scheduled for the spring of 2020 but was cancelled because of the COVID-19 pandemic.

[6] ESDC (2019a) suggests that in communities participating in both the 2016 and the 2018 counts, the 2018 count was likely more accurate, in part because experience is required to learn where people experiencing unsheltered homelessness can be found. The difficulty inherent in enumerating people experiencing unsheltered homelessness means that the imprecision of the homeless count is greatest in communities without shelters. Hanratty (2017) similarly notes that when measured over time, counts of the number of people experiencing homelessness in a community will be least precise in communities without shelters.

Drummondville, Gatineau/Outaouais, Quebec, Saguenay/Lac St-Jean, Sherbrooke and Trois-Rivières). The list of the 49 communities included in our sample is provided in Appendix A.

Our sample of 49 communities shows that a total of 20,268 people experienced homelessness on the nights of the 2018 point-in-time count. Of these, 17,214 (84.9 per cent) were sheltered and 3,054 (15.1 per cent) were unsheltered. The relative shares of people experiencing sheltered versus unsheltered homelessness in our sample of 49 communities are very similar to the shares of people sheltered (82.5 per cent) and unsheltered (17.8 per cent) reported in all 61 communities.

The data provided to us included information on the age of people experiencing homelessness on the nights of the 2018 count. Table 1 reports these data.

Table 1: People Experiencing Homelessness, 2018 Point-in-Time Count, 49 Communities

Age Range	Number	Per Cent of Total
Dependents, under age 18	3,706	18.3%
Unaccompanied youth aged 13-24 years	2,181	10.8
Adults aged 25-49 years	9,779	48.2
Older adults aged 50-64 years	4,043	19.9
Seniors aged 65 years and above	559	2.8
Total	20,268	100

Note: These calculations are based on information reporting the percentage of each age group who were homeless in each community. Due to rounding, the total for each age group may not be exact. The number of people reported as homeless by age in each community is suppressed.

As part of the 2018 point-in-time count, ESDC (2019a) reports that across the 61 communities participating in the count, 19,536 people took part in a survey that provided more information on those experiencing homelessness. Importantly, 30 per cent of survey participants self-identified as Indigenous, with the majority identifying as First Nations. It is almost certainly true that First Nations are over-represented in the point-in-time count in most, if not all, communities. ESDC (2019a) also reports breakdowns by gender, time in the community, age of first homelessness experience and the period of time spent homeless. However, the agreement between ESDC and participating communities does not allow for the reporting of community-level data.

DEFINING DEPENDENT AND INDEPENDENT VARIABLES

In this section, we estimate an empirical relationship between the prevalence of homelessness in a community and the relevant characteristics of those communities. The sources of data are provided in Appendix B. For each community i, the prevalence of homelessness is defined as the number of people enumerated as homeless by a point-in-time count on a given night measured as a fraction of the population of that community aged 15 years and older (PiT_i) . Three measures of the prevalence of homelessness will be considered: the total homeless prevalence, the unsheltered

prevalence and the sheltered prevalence. Each model includes variables meant to test the state of the local housing market's influence on the local prevalence of homelessness as it pertains to people most at risk of homelessness, the community's demographic composition and the climate.

Most people living in deep poverty are single (Herd et al. 2020). Not surprisingly, then, most people experiencing homelessness are also single.[7] When considering the role of income in determining the local prevalence of homelessness, we should therefore think about the income available to single people.

Kneebone and Wilkins (2016, 2020) show that for a single adult, social assistance income closely approximates the income of a single adult with an income in the lowest quintile of after-tax incomes. Thus, when we use measures of social assistance income, we are using a measure that closely approximates the after-tax incomes of the very poor, those who are most at risk of homelessness. Individuals with very low earned income and families and individuals reliant on social assistance income tend to be one and the same. Our measure of the income available to single people at risk of homelessness is the social assistance income available to a single person who is classified as capable of full-time employment, SA_i.[8] Using this measure is also useful because it provides us with a measure of the potential role a policy instrument could play.

We assume that the housing market conditions relevant to determining local homelessness are relevant for persons and families with very low income. The key measure of the housing market for this demographic is the cost of renting.[9] Rents vary by size of rental unit (studio, one bedroom, two bedrooms, etc.) and by community. They also vary by quality (old units in need of repair versus new units with modern facilities) and by location in the community (some are close to schools, public transportation, etc., while others are not). When using rents as a measure of the shelter costs relevant for households with limited income, it is important to recognize that for most such households the relevant rental market is for units of relatively poor quality and so offered at relatively low cost. Using the average (or median) rent paid on a rental unit in a community overstates the rent paid by most individuals and families with low income.

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7   See, for example, Calgary Homeless Foundation (2018) where it is reported that 85 per cent of those enumerated as homeless during that city's point-in-time count identified as being single.

8   We assume the individual is in receipt of all benefits available to a single person in the province in which the person lives. Data on social assistance income are from Tweddle and Aldridge (2018). The data in that published report are measured in real dollars deflated using the CPI for Canada. We thank Sherri Torjman, Anne Tweddle and Ken Battle for providing us with the nominal values of these published data which we use in this report.

9   While it is true that some individuals or families in low income, perhaps due to divorce or other circumstances, may find themselves to be homeowners, they are in the minority. Statistics Canada (CANSIM Table 11-10-0057-01) reports that in Canada in 2016, only 22 per cent of individuals and families in low income owned a principal residence. Of these, only about half were mortgage free. Even those who are mortgage free face costs of homeownership (maintenance, utilities and property taxes) that are like the costs of renting. For all these reasons, we believe the cost of renting is a good measure of the housing costs faced by those with low incomes. The rest of the rental universe appropriate for individuals and families with low income includes non-purpose-built rentals such as basement suites and non-market public housing units. We assume the rents paid on the first quintile of purpose-built market rentals are equal to or exceed the rent on these other sources of rental housing.

We use data on the rent charged on a relatively low-quality, purpose-built, one-bedroom rental unit priced at the top of the first quintile of rents available in that community, $RENT_i$.[10, 11] Estimates by Kneebone and Wilkins (2019, 2020) indicate that single people reliant on social assistance income or earned incomes of similar size must devote all, or nearly all, of that income to paying rent on even low-quality units. They typically cannot afford to live alone and so must share housing costs with others. We assume that roommates typically seek to share a one-bedroom unit rather than try to find a sufficient number of roommates to make renting a two- or three-bedroom unit affordable.

In our empirical estimation, we examine the influence of housing affordability on the prevalence of homelessness in two ways. First, directly, by using a measure of ratio of rent-to-income, $RENT_i/SA_i$, and then indirectly by separately measuring the effects of rent, $RENT_i$ and income, SA_i. A positive value for the regression coefficient on $RENT_i/SA_i$ indicates that as housing becomes more expensive relative to income, it is more likely that people living in the community will experience homelessness. The relative size of the coefficients on $RENT_i$ and SA_i is a measure of the relative influence of the two components of the relative cost of housing.

The influence of the cost of housing on the prevalence of homelessness may vary whether the dependent variable defines the total number of people experiencing homelessness, the number of people experiencing sheltered homelessness or the number experiencing unsheltered homelessness. Figure 1 is a stylized description of the options available to someone experiencing, or at risk of, homelessness. It describes a limited range of housing options along which a person moves as circumstances change. The price of housing may matter more for a person whose situation is such that his choices are between inexpensive rental housing and an emergency shelter but less for someone whose circumstances have deteriorated to the extent the choice of accommodation is limited to using a shelter or sleeping rough.

Figure 1: The Housing Continuum

Rough Sleeping	Couch Surfing/Shelter	Rental Unit
Unsheltered	*Sheltered*	*Housed*
Homelessness	*Homelessness*	
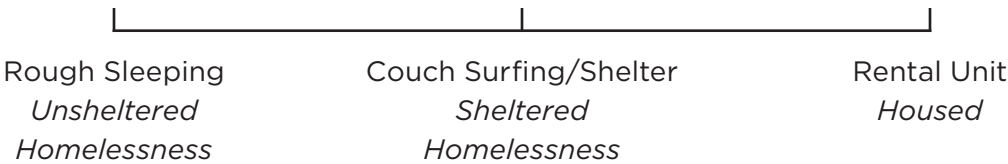
In addition to the rent-to-income ratio, we also introduce a measure of the local vacancy rate, $VACANCY_i$. Unfortunately, data on vacancy rates corresponding to the distribution of rents are not available.[12] Instead, we use a less precise measure; namely, the average

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    Data provided by special request to CMHC. The rental data CMHC provided are the actual amounts tenants pay for their rental unit. Rents are those paid on units in the primary rental market purposely built for rent. Utilities such as heating, electricity and hot water may or may not be included in the rent.

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    Our use of rents drawn from the low end of the rent distribution parallels the approach of Honig and Filer (1993), who use rents drawn from the 10th percentile of the distribution of rents.

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    A preferred measure would be like that used by Honig and Filer (1993). Those authors use a measure of the vacancy rate for rental units priced in the 10th decile of the rent distribution.

vacancy rate for all one-bedroom units. Our measure, then, is not focused on the low end of the rental market that is relevant to people most at risk of homelessness.

In addition to variables describing the state of the housing market relevant to those most at risk of homelessness, our empirical model includes a measure of the fraction of the local population for whom those measures are likely relevant. Statistics Canada provides data on the number of adults in each community living with an income below the low income cut-off. Our measure, $LICO_i$, measures the fraction of the community's adult population most at risk of homelessness due to poverty. The larger this fraction, the more likely any set of circumstances will result in people experiencing homelessness.

As noted earlier, the U.S. literature has frequently found that demographic variables play a role in determining the local prevalence of homelessness. That literature has used measures of the fraction of local populations who are Black or Hispanic. When statistically significant, this variable has been found to be positively related to local homelessness. In our study, we use data on the size of the local population, aged 15 years and older, that self-identifies as Indigenous. Our measure, $INDIGENOUS_i$, is the fraction of the local adult population that self-identifies as Indigenous.

As noted in our review of U.S. studies, a community's climate has a potential role to play in explaining the local rate of homelessness by its impact on the relative feasibility of rough sleeping. The less hospitable the community's climate, the more likely people at the far left of the housing continuum described in Figure 1 will be forced into sheltered homelessness. Possibly to a lesser extent, and recognizing that emergency shelters often leave users on the street during the day, a harsh climate may also push sheltered homeless into housing, possibly at the cost of more severe food insecurity. Similarly, a less harsh climate makes rough sleeping more palatable and so reduces sheltered homelessness. Our measure of the local community's climate, $CLIMATE_i$, is the average overnight low temperature during the month of January, measured in degrees Celsius.[13]

Table 2 provides summary statistics on the dependent and independent variables used in our empirical measurements.

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[13] As this definition makes clear, climate is distinct from daily measures of weather conditions. Jadidzadeh and Kneebone (2015) measure how weather conditions in Calgary cause people experiencing homelessness to move along the housing continuum represented in Figure 1. They find that cold and precipitation are associated with higher shelter use and hypothesize this is the result of rough sleepers responding to weather conditions.

TABLE 2: Summary Statistics

	Max	Min	Mean	Median	St. Dev.
PiT - total	20.05	0.12	1.70	1.08	2.91
PiT - sheltered	6.48	0.10	1.01	0.64	1.05
PiT - unsheltered	13.57	0.001	0.69	0.19	2.04
RENT/SA	1.63	0.72	1.00	0.98	0.17
RENT	13,200	5,400	9,060	8,868	1,529
SA	11,383	7,126	9,068	9,646	947
LICO	117.12	36.62	71.97	70.47	16.53
INDIGENOUS	386.03	4.98	61.96	41.87	71.65
VACANCY	22.4	0.10	3.57	2.60	3.52
CLIMATE	1.50	-29.30	-12.72	-12.10	6.03

Note: Measures relative to population are presented as per 1,000 adults. RENT and SA are annual values.

ECONOMETRIC MODEL

Two alternative specifications define our econometric model.

$$(1) \quad PiT_i^j = \propto + \beta_1 \cdot \left(\frac{RENT_i}{SA_i}\right) + \beta_2 \cdot (VACANCY_i) + \beta_3 \cdot (LICO_i) + \beta_4 \cdot (INDIGENOUS_i)$$

$$+ \beta_5 \cdot (CLIMATE_i) + \epsilon$$

$$(2) \quad PiT_i^j = \propto + \beta_1 \cdot RENT_i + \beta_2 \cdot SA_i + \beta_3 \cdot (VACANCY_i) + \beta_4 \cdot (LICO_i)$$

$$+ \beta_5 \cdot (INDIGENOUS_i) + \beta_6 \cdot (CLIMATE_i) + \epsilon$$

Subscript *i* denotes a community and superscript *j* defines point-in-time counts of people experiencing unsheltered homelessness, sheltered homelessness and total homelessness. Except for *CLIMATE,* all variables are measured in natural logarithms.

The models are estimated using weighted least squares regression. As noted earlier, there is reason to believe more precise estimates of homelessness are available from communities with a greater supply of homeless shelter beds. These are larger communities.[14] Thus, we use population weights to ensure estimation gives more weight to observations from communities with more precise estimates of the number of people experiencing homelessness.

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[14] Data on the number of shelter beds by community are available from ESDC (2019b).

Table 3: Estimation Results

Dependent Variable	Prevalence of Total Homelessness		Prevalence of Unsheltered Homelessness		Prevalence of Sheltered Homelessness	
Model	(1)	(2)	(1)	(2)	(1)	(2)
Constant	-8.41 (1.49)**	-34.68 (13.14)**	-6.32 (3.15)**	-47.20 (18.33)**	-9.30 (1.81)**	-28.88 (15.26)*
$\ln(RENT_i/SA_i)$	2.12 (0.78)**		-0.08 (1.11)		2.64 (0.85)**	
$\ln(RENT_i)$		3.26 (0.88)**		1.69 (1.13)		3.49 (1.02)**
$\ln(SA_i)$		-0.26 (1.36)		2.97 (2.11)		-1.25 (1.46)
$\ln(VACANCY_i)$	-0.11 (0.22)	-0.02 (0.19)	0.33 (0.31)	0.47 (0.28)	-0.11 (0.24)	-0.04 (0.22)
$\ln(INDIGENOUS_i)$	0.53 (0.25)**	0.65 (0.26)**	0.54 (0.15)**	0.72 (0.15)**	0.48 (0.28)*	0.56 (0.30)*
$\ln(LICO_i)$	1.62 (0.28)**	1.27 (0.29)**	0.67 (0.67)	0.12 (0.56)	1.79 (0.33)**	1.52 (0.41)**
$CLIMATE_i$	0.05 (0.03)*	0.06 (0.03)**	0.07 (0.03)**	0.08 (0.03)**	0.05 (0.04)	0.05 (0.04)
Adj R^2	0.69	0.71	0.42	0.48	0.71	0.71

Notes: Asterisks denote statistical significance at the five per cent (**), and 10 per cent(*)levels. Estimation is performed using weighted least squares where community populations aged 15 years and above are used as weights. The values in parentheses are Huber-White-Hinkley heteroscedasticity-consistent standard errors. Testing on the residuals shows we can reject the null hypothesis of heteroscedasticity. N = 49. Estimation was done using the EViews 12 statistical package.

Table 3 presents the regression results.[15] The first two columns show the results from regressing the total number of people identified as experiencing homelessness (measured as a fraction of the community's adult population) in the 2018 point-in-time count against the explanatory variables defined above. The third and fourth, and the fifth and sixth columns, show the results when the dependent variable is changed to be the prevalence of unsheltered homelessness and the prevalence of sheltered homelessness, respectively. In all specifications, the coefficient on *VACANCY* is statistically insignificant.

Looking first at the results for the prevalence of total homelessness, when housing affordability is measured by the rent-to-income ratio, the coefficient indicates that a one per cent increase in the ratio of rent to income results in a 2.1 per cent increase in the prevalence of homelessness. In the average community, the prevalence of homelessness would increase from 1.70 homeless per 1,000 adult population to 1.74. In the average community in our sample, this would be an increase of 14 people counted as homeless in a point-in-time count. In the largest community in our sample, it would mean an additional 195 people counted as homeless in a point-in-time count. When considered separately, *RENT* is statistically significant, but *SA* is not. A one per

15   An additional attempt to identify whether certain demographics are discriminated against in housing markets used a measure of the fraction of the local population who are non-permanent residents or recent immigrants to Canada. In consideration of the possibility that large cities have different experiences with homelessness than smaller communities, we also created a dummy variable identifying communities with populations of 250,000 or more adults. These variables proved to be highly insignificant.

cent increase in rent is associated with a 3.3 per cent increase in the prevalence of homelessness, but an increase in the income of those most at risk of homelessness has no influence. This suggests that for the very poor, an incremental increase in income is devoted to satisfying needs other than housing.

Our estimates show that the prevalence of homelessness increases with the fraction of the population that self-identifies as Indigenous. Prevalence is also higher in communities with a higher fraction of their population with incomes below the LICO measure of the poverty line. Finally, climate is also found to have an important influence. As discussed earlier, a warmer climate makes it feasible for people in difficult circumstances to move toward the left of the housing continuum and so in the direction of shelter use and rough sleeping. The coefficient indicates that the prevalence of homelessness is five per cent higher for every degree higher that the overnight temperature is in January.

The results presented in the first two columns indicate that community-level factors accounted for 70 per cent of the variance in the prevalence of homelessness across our 49 communities.

The third and fourth columns identify influences on the prevalence of unsheltered homelessness, or the fraction of the community's adult population found to be sleeping rough on the night of the point-in-time count. None of $RENT_i/SA_i$, $RENT_i$ or SA_i has a statistically significant influence on the prevalence of unsheltered homelessness, suggesting that for this population the relevant choices on the housing continuum do not include rental accommodations. The share of the local population with incomes below the poverty line is also an insignificant explanation for the prevalence of unsheltered homelessness. An implication is that efforts to reduce local poverty, while reducing overall homelessness may not have a significant influence on unsheltered homelessness.

The share of the local population that identifies as Indigenous and our measure of climate conditions remain statistically significant influences on homelessness. The prevalence of unsheltered homelessness is seven to eight per cent higher for every degree higher the average overnight temperature is in January. Overall, community-level factors account for about 45 per cent of the variance in unsheltered homelessness across our 49 communities.

Finally, the last two columns identify influences on the prevalence of sheltered homelessness — the fraction of the community's adult population found to be using homeless shelters on the night of the point-in-time count. The rent-to-income ratio returns as a statistically significant influence, but again the specification of equation (2) indicates this influence is felt only through $RENT$ and not SA. The significance of rent in determining sheltered homelessness indicates that for this population, the relevant choices on the housing continuum include rental accommodations. The extent of poverty in the community is a statistically significant influence on the prevalence of sheltered homelessness but the harshness of climate is not. Climate's influence on homelessness is solely felt through its influence on the prevalence of unsheltered homelessness.

DISCUSSION AND POLICY IMPLICATIONS

Our empirical estimates suggest that what has been typically observed in the U.S. is also true in Canada; namely, that for people exposed to the risk of homelessness by poverty, rents are a key determinant of the rate of local homelessness. The available policy responses to this result are many and varied. This is so in part because housing is a competitive market where rents are sensitive to many influences.

Direct intervention in the housing market in the form of constructing government-owned housing is certainly an option for governments. For people whose experience with homelessness is due to, or exacerbated by, disability, mental illness, adverse childhood experiences, substance abuse or health issues, this may be a preferred response as this population may require wrap-around services and housing adaptations less conducive to private provision.

Other options involve engaging the private sector's efficiency to provide housing that does not necessarily also require addressing health or other needs of people experiencing homelessness. For example, evidence from the U.S. suggests that housing regulations and density restrictions constrain the supply of housing by private builders and so increase rents. In his review of U.S. studies, Raphael (2010) finds that more onerous local housing market regulation is associated with more homelessness because it is correlated with more expensive housing and more expensive housing is correlated with homelessness. Relying on U.S. cross-section data, Malpezzi and Green (1996) show that moving from a relatively unregulated to a heavily regulated metropolitan area increases rents among the lowest income renters by 1/5 and increases home values for the lowest quality single-family homes by more than 3/5. Thus, the largest price effects of such regulations occur at the bottom of the housing market, which is disproportionately occupied by low- and moderate-income households.[16] Reducing density restrictions and careful use of land-use and building regulations are less visible policy responses to homelessness but can, more easily than many policies, be tailored to local communities' specific needs.

Interest rates and tax policies influence the housing market by affecting new construction costs, the costs of rehabilitating old buildings and the costs of maintenance and building abandonment. Rents are also sensitive to policy choices that have allowed or encouraged the disappearance of single-room occupancy hotels, boarding houses, trailer parks and other housing options that the very poor can afford. In Vancouver, the Single Room Accommodation Bylaw and the SRO Revitalization Plan represent efforts to maintain an important element of the housing continuum relevant for people at risk of homelessness.[17] Policies like these influence the homelessness rate by maintaining the supply of affordable housing and so keep rents lower than they would be otherwise.

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[16] We know of no recent research along these lines in Canada. It is important to understand the role housing regulations play in explaining local levels of homelessness.

[17] For a description of these efforts, see https://vancouver.ca/people-programs/single-room-accommodation-bylaw.aspx#:~:text=The%20SRA%20Bylaw%20prevents%20the,less%20than%20320%20square%20feet.

Our empirical results show that marginal additions to the income of people in deep poverty do not influence the prevalence of homelessness by making housing more affordable. While additions to income must certainly increase the well-being of people with very low incomes, the statistical insignificance of SA_i in our estimate of equation (2) suggests it does so by means other than by securing housing. This is consistent with studies showing that among those with low income, the income elasticity of demand for housing is small.[18] Thus, while increases in income support improve the welfare of people in poverty, this may not be reflected in reduced homelessness and suggests instead that additional income is first allocated toward other basic needs, including reducing food insecurity. The influence on the prevalence of homelessness that we identify as emanating from the rent-to-income ratio in our estimate of equation (1) is mainly to changes in rent that result from changes in the supply of inexpensive housing.

The positive coefficient on our LICO variable indicates that public policies that increase income sufficiently to reduce the fraction of the local population with incomes below the poverty line, reduce the prevalence of sheltered homelessness. A one per cent reduction in the fraction of the population with incomes below the poverty line reduces the prevalence of homelessness by approximately 1.5 per cent. Poverty reduction is an important tool in the fight against sheltered homelessness. Efforts sufficiently large to reduce the prevalence of poverty in a community have a larger influence on homelessness than marginal increases in the incomes of people most at risk of homelessness.

Our estimates show that the larger the share of the local population that self-identifies as Indigenous, the larger the local prevalence of homelessness. The influence is statistically significant for both sheltered and unsheltered homelessness. Our estimates do not allow us to say whether this is due to racial discrimination, cultural influences that explain why some racialized groups experience homelessness more than others, or other potential explanations for why landlords may be hesitant to rent to some demographics. This is an important area for research, as people who identify as Indigenous are severely over-represented in the population experiencing homelessness. Partnering with Indigenous communities to better understand the reasons for this over-representation is crucial for informing what policy choices are required to address this problem.

Finally, our results are supportive of suggestions that climate plays an important role in determining the local prevalence of homelessness. Climate is important for determining the relative attractiveness of the types of accommodations among which people with very low incomes are often required to choose; namely, sleeping rough, couch surfing, using an emergency shelter and inexpensive housing. Our empirical results indicate no one should be surprised if unsheltered homelessness is more prominent in mild than harsh climates. All else being equal, the community with the mildest climate in our sample has an unsheltered homeless rate that is 100 to 120 per cent higher than that observed in the average community and between 215 and 245 per cent higher than in the coldest community.

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[18] A study by Friedman and Weinberg (1981) uses the results of a large U.S. housing allowance experiment directed specifically toward renters with low income to derive an estimate of the income elasticity of demand equal to 0.36. A more recent study by Hyslop and Rae (2019) derives an income elasticity of demand of about 0.55.

CONCLUSION

There is no clear and rigid boundary that separates people who are securely housed and those who are not. Many people in Canada live in a wide, grey area between these extremes. They move within a continuum of housing options that include rough sleeping, couch surfing, the use of homeless shelters and, if fortunate, low-priced rental accommodations. The common denominator for the largest part of this population is an income that is low relative to the cost of maintaining secure housing. Being Indigenous is also an important predictor of what one's experience with homelessness will be.

In this paper, we have focused on identifying the significance of the structural causes of homelessness. This is not to deny that personal characteristics play a role in determining local homeless rates, for they most certainly do. As O'Flaherty (2019) notes, negative events might select an individual for homelessness, but community-level effects can lessen or magnify the consequences of those events. This paper has tried to identify the impact of community-level conditions on the local prevalence of homelessness.

A limitation of our study is that we have been unable to separately identify how the structural determinants of homelessness vary in importance for different demographic groups. Although our data include people of all ages, genders and ethnicities, only the total number of people experiencing homelessness is available to us. We strongly suspect that the structural determinants of youth homelessness differ from that for adults, and that people of different ethnicity and gender experience the effects of structural determinants differently. This finer level of analysis is an important area for future research.

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APPENDIX A

The following communities participated in the 2018 point-in-time count. The count occurred between March 1 and April 30, 2018. <u>Underlined</u> communities are those that did not, or whose provincial government did not, allow access to the data collected in their communities. Names of communities printed in **<u>bold underline</u>** were not included in our sample due to lack of data on independent variables. In our dataset, the point-in-time counts from Charlottetown and Summerside were combined.

Barrie (Simcoe)	London
Bathurst	Medicine Hat
Belleville	<u>Metro Vancouver</u>
Brandon	Moncton
Brantford	<u>Montreal</u>
Calgary	Nanaimo
Charlottetown	Nelson
<u>Drummondville</u>	Nipissing/North Bay
Dufferin	Ottawa
Durham (Oshawa)	Peel Region
Edmonton	Peterborough
Fredericton	Prince Albert
<u>Gatineau/Outaouais</u>	Prince George
Grande Prairie	<u>Quebec</u>
Guelph	Red Deer
Halifax	Regina
Halton Region	<u>Saguenay/Lac St-Jean</u>
Hamilton	Saint John
<u>Iqaluit</u>	Saskatoon
Kamloops	Sault Ste. Marie
Kelowna	<u>Sherbrooke</u>
Kingston	St. Catharines/Niagara/Thorold
Lethbridge	St. John's

Sudbury

Summerside

Sydney/Cape Breton

Thompson

Thunder Bay

Toronto

Trois-Rivières

Victoria

Waterloo Region

Whitehorse

Windsor

Winnipeg

Wood Buffalo

Yellowknife

York

APPENDIX B: VARIABLE SOURCES AND DESCRIPTION

Unsheltered PiT Count: Enumeration of the number of people who were counted outside, or those who reported spending the night unsheltered (including sleeping in vehicles and abandoned buildings), in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA).

Sheltered PiT Count: Enumeration of the number of people in emergency shelters, domestic violence shelters or extreme-weather shelters, usually based on administrative data, in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA).

Population Aged 15 Years and Above, 2016 Census: Total population older than 15 years, in a Census Metropolitan Area (CMA) or Census Agglomeration (CA). Statistics Canada, 2016 Census of Population. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.

Indigenous Population, 15 Years and Older, 2016 Census: Total Aboriginal population of people aged 15 years and older, in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA). "Aboriginal identity" includes persons who are First Nations (North American Indian), Métis or Inuk (Inuit) and/or those who are registered or treaty Indians (that is, registered under the *Indian Act of Canada*) and/or those who have membership in a First Nation or Indian band. Aboriginal peoples of Canada are defined in the *Constitution Act*, 1982, section 35 (2) as including the Indian, Inuit and Métis peoples of Canada. Statistics Canada, 2016 Census of Population. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.

Recent Immigrants (between 2011 and 2016), 15 Years and Older, 2016 Census: All immigrant population older than 15 years who arrived in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA) between 2011 and 2016. The period of immigration refers to the period in which the immigrant first obtained landed immigrant or permanent resident status. "Age at immigration" refers to the

age at which an immigrant first obtained landed immigrant or permanent resident status. "Immigrant" refers to a person who is, or who has ever been, a landed immigrant or permanent resident. Such a person has been granted the right to live in Canada permanently by immigration authorities. Immigrants who have obtained Canadian citizenship by naturalization are included in this group. In the 2016 Census of Population, "Immigrant" includes immigrants who landed in Canada on or prior to May 10, 2016. Statistics Canada, 2016 Census of Population. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.

Non-Permanent Residents, 15 Years and Older, 2016 Census: All non-permanent resident population older than 15 years, in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA).

"Non-permanent residents" includes persons from another country who have a work or study permit or who are refugee claimants, and their family members sharing the same permit and living in Canada with them. Statistics Canada, 2016 Census of Population. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.

Population with Low Income: The number of people with income below the after -tax (AT) low income cut-off (LICO), aged 18 years old and older, in a specified Census Metropolitan Area (CMA) or Census Agglomeration (CA). The low income cut-off, after tax refers to an income threshold, defined using 1992 expenditure data, below which economic families or persons not in economic families would likely have devoted a larger share of their after-tax income than average to the necessities of food, shelter and clothing. More specifically, the thresholds represented income levels at which these families or persons were expected to spend 20 percentage points or more of their after-tax income than average on food, shelter and clothing. These thresholds have been adjusted to current dollars using the all-items Consumer Price Index (CPI). For the 2016 Census, the reference period is the calendar year 2015 for all income variables. Statistics Canada, 2016 Census of Population. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.

One-bedroom 2018 Rents, First Quintile: Monthly amount of rent paid in a primary rental market, in each Census Metropolitan Area (CMA) or Census Agglomeration (CA), for a one-bedroom apartment priced in the first (lowest) quintile of rents. To calculate a quintile, all rents are sorted from lowest to highest and then divided into five groups (quintiles), each with an equal number of rental units. Our data are the rent paid on the one-bedroom unit priced at the top of the first quintile (least expensive) of rents in the CMA or CA. The rent refers to the actual amount tenants pay for their unit. No adjustments are made for the inclusion or exclusion of amenities and services such as heat, hydro, parking and hot water. For available and vacant units, the rent is the amount the owner is asking for the unit. Data provided on special request made to Canada Mortgage and Housing Corporation (CMHC).

Income Support Paid to a Single Person Deemed to be Employable: This is the amount of annual income provided in 2018 to an individual who is single and is deemed to be able to work with no declared disabilities as defined by a government in 2018.

The amount includes all benefits made available by federal and provincial governments. We assume all benefits are applied for and received. Data are provided by the Maytree Foundation in its *Welfare in Canada* series. https://maytree.com/welfare-in-canada/.

Vacancy Rate: The vacancy rate in the rental market, all unit sizes, in apartment structures of six or more units. Data produced from the CMHC rental market survey and available from Statistics Canada Tables 34-10-0127-01, 34-10-0128-01, and 34-10-0129-01.

January Temperature: This is the average overnight low temperature, measured in degrees Celsius, observed during the month of January in each community over the period 1981–2010. Source is "Canadian Climate Normals 1981–2010 Station Data."

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