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# Food Bank Use Prior to Homelessness

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# **Food Bank Use Prior to Homelessness**

Ali Jadidzadeh and Ronald Kneebone

# **EXECUTIVE SUMMARY**

This policy brief investigates the relationship between food bank usage and homelessness, examining how individuals and families respond to financial shocks that threaten their ability to maintain a home.

By linking administrative data from the Calgary Homeless Foundation and the Calgary Food Bank, this research identifies patterns in food bank reliance before individuals and families enter the shelter system. The data reveal that as people approach the loss of housing, their use of food banks increases significantly, suggesting that the use of food banks may be an early warning indicator of potential homelessness.

Our linking of data describing food bank usage and homelessness reveals that among individuals and families who enter a homeless shelter for the first time, over 60 per cent had used the food bank in the five years prior to their shelter admission. During the year prior to their first stay in a homeless shelter, the average individual increased their food bank usage by 70 per cent relative to five years earlier. Families showed a similar trend, with a 74 per cent increase in food bank usage during the year prior to shelter entry relative to five years earlier.

The findings of this research suggest that for many individuals and households, homelessness is not the result of a sudden catastrophic event but rather a steady worsening of one's circumstances. By using data on food bank reliance as an early indicator of housing distress, policymakers and service agencies may be able to develop interventions to prevent homelessness before it happens. Taking advantage of this opportunity requires greater attention being paid to the common experiences of individuals and families relying on food banks and those facing housing challenges.

# INTRODUCTION

Problems such as homelessness, food insecurity, material deprivation, ill health and the lack of savings are rarely experienced in isolation from one another.<sup>1</sup> They are all elements of the same experience that comes from poverty. Given their common underlying cause, one should not be surprised to find changes in these experiences are closely correlated. The goal of this note is to investigate the nature of the relationship between two social problems that have garnered a great deal of attention lately; namely, homelessness and the use of food banks.

Losing housing is catastrophic for an individual or a family. To lose housing means to suffer ill health, the loss of employment opportunities and to lessen the possibilities available to one's children. It is not a loss that is easily accepted by those affected. Shinn, Greer, Bainbridge, Kwon and Zuiderveen (2013) report that most families in New York City somehow manage to stay out of homeless shelters despite being at high risk of losing housing and despite being ineligible for supportive services. Kneebone and Wilkins (2023) estimate that in Calgary, over 40,000 households have incomes such that they can retain their housing only by making concerted efforts to save expenditures by moving to lower quality housing, by crowding and by relying on charities. Shinn and Khadduri (2020) emphasize that even without policy interventions, people will act of their own accord to minimize non-housing expenditures and so save themselves from homelessness.

Jadidzadeh, Kneebone and Wilkins (2024) have recently shown that in Calgary new admissions into homeless shelters are not contemporaneously correlated with increases in rents relative to the incomes of individuals and families in low income. They interpret the lack of contemporaneous correlation as being the result of efforts by individuals and families put at risk of homelessness by high rents to first take steps to minimize expenditures and in this way conserve limited incomes for paying rent. Homelessness may result only following a prolonged period of efforts being made to minimize non-housing expenditures. Kneebone and Wilkins (2024) note that reserving income for paying rent involves some combination of deprivation and relying on charities and suggest that whether savings are accomplished with deprivation (going without) or by relying on charities depends on how easily goods or services provided by food banks is a close substitute for food purchased from retail outlets, then we should expect increased reliance on food banks to precede the loss of housing and for the use of food banks to increase with growth in the mismatch between income and the size of expenditures required to purchase necessities.<sup>2</sup>

In this note, we investigate this possibility empirically by observing how people under threat of homelessness use food banks. We do this by linking two administrative data sets, one showing how and when uniquely identified individuals and families use homeless shelters and the other showing how and when these same uniquely identified individuals and families use food banks. We focus on individuals and families who during our sample period enter a homeless shelter for the first time, people who may potentially have been under housing pressure beforehand.

This policy brief reports preliminary results from an ongoing study of how individuals and families respond to shocks to their budgets that challenge their ability to maintain housing. By detailing these responses, it may be possible to anticipate changes in the number of

<sup>&</sup>lt;sup>1</sup> See, for example, Gunderson, Weinreb, Wehler and Hosmer (2003), Kirkpatrick and Tarasuk (2011), Ouellette, Burstein, Long and Beecroft (2004), Loopstra and Tarasuk (2013) and Fafard St-Germain and Tarasuk (2018).

<sup>&</sup>lt;sup>2</sup> Clothing and furniture provided by charities are also substitutes for retail purchases and so one should also expect reliance on their services to precede the loss of housing. In this way, food banks and other charities are important elements of the social safety net that enables people to retain housing.

individuals and families experiencing homelessness and identify points of intervention interventions that may prove effective for keeping people in housing and preventing them from experiencing homelessness.

In the next section, we describe two administrative data sets describing how individuals and families use food banks and homeless shelters. In that section, we also describe how these data sets are linked to allow us to show how uniquely identified individuals and families use both social supports. In the section following, we present simple descriptions and correlations of food bank use with first entry into a homeless shelter. This is followed by a discussion of the results, limitations and possibilities for future research aimed at anticipating losses of housing with the goal of preventing those losses from ever happening.

# THE DATA AND SETTING

Our examination draws on data describing the use of food banks and the entry into homeless shelters by individuals and families in Calgary, Alberta, Canada. Calgary is a city with a population of over 1.3 million people. The average household income is high and the ratio of employment to population is one of the highest among major cities in Canada. Even so, homelessness is a problem in Calgary. In five point-in-time counts conducted over the period 2014–22, an average of 3,168 people in Calgary were found to be experiencing homelessness on the night of the count. The number of individuals and families making use of food banks is also high. During the 12 months ending August 31, 2023, a total of 88,399 uniquely identified clients received food hampers from the Calgary Food Bank (2023).

In Calgary, the homeless-serving sector is co-ordinated by the Calgary Homeless Foundation (CHF), an independent charity funded by philanthropy and grants from Canada's federal government and Alberta's provincial government. The CHF plays a key role in funding and co-ordinating the responses of social agencies and shelter providers to changes in the needs of the population experiencing homelessness. The CHF collects and maintains large administrative data sets describing the daily movements into and out of shelters and people's experiences in housing programs.

The Calgary Food Bank, the city's foremost hunger relief organization, relies on the generosity of individuals, corporations and foundations to support its operations. Focused on strategic food sourcing and operating a centralized warehouse, the CFB efficiently distributes resources to a network of community food programs and partners. This network ensures those experiencing food insecurity can get emergency food hampers. Beyond direct aid, the Calgary Food Bank champions policies that address the systemic causes of hunger in Calgary. Like the Calgary Homeless Foundation, the Calgary Food Bank collects data on daily food hamper usage and family composition.

CHF data, from January 1, 2009 to January 14, 2024, encompass both single adult and family shelters. The data include daily check-in/check-out records, as well as self-reported age, gender and ethnicity for individuals and for heads of households. Single adult shelter data represent the four major shelter providers in Calgary: Calgary Drop-In Centre, Salvation Army, Mustard Seed and Alpha House. Together, they account for 99 per cent of total shelter capacity.<sup>3</sup> Family shelter data are sourced from Inn from the Cold and Brenda's House, shelters that combine to account for all family shelter beds in the city. As reported in Table 1, the CHF data set contains

<sup>&</sup>lt;sup>3</sup> Based on data as reported in August 2019. See Government of Alberta (n.d.). Our data exclude emergency winter beds in these four shelters and those provided specifically for people escaping domestic violence.

57,361 unique individuals (77.3 per cent male, 22.7 per cent female) in single adult shelters, and 4,890 unique families (33.7 per cent male-headed, 66.3 per cent female-headed) in family shelters. These individuals and families account for 6,389,943 and 380,313 bed/units used in the respective shelter types over the sample period.

Calgary Food Bank data, covering January 5, 2009 to September 29, 2023, describe food bank use by 78,163 single adults and 267,916 families. As reported in Table 1, where gender is known, more single adults using the food bank identify as male than female. With respect to families, the opposite is true: slightly more families are female-headed.<sup>4</sup>

	Shelters		Food Bank	
	Single Adult	Families	Single Adult	Families
Number of UIDs	57,361	4,890	78,163	267,916
Number of Observations	6,389,943	380,313	407,085	2,077,248
Gender:				
Male	44,338	1,648	46,130	129,963
Female	13,023	3,242	31,806	137,458
Unknown			227	495
Sample Period	Jan. 1, 2009 - Jan. 14, 2024	Jan. 1, 2009 - Jan. 14, 2024	Jan. 5, 2009 - Sep. 29, 2023	Jan. 5, 2009 - Sep. 29, 2023

## Table 1. Original Sample Information for Calgary Shelters and Food Bank Data

Note: Single adult and family shelter data provided by the Calgary Homeless Foundation. Food bank data provided by the Calgary Food Bank.

This study examines the intersection of homelessness and the use of food banks by focusing on data describing those who used both Calgary's homeless shelters and its food bank. To ensure participants' privacy, the study uses anonymized administrative data obtained from the two agencies. Importantly, neither organization had access to the other's identifiable data. To facilitate data linkage while protecting confidentiality, the two agencies used a similar algorithm to generate unique but anonymized identifiers (UIDs). These UIDs were created using a combination of first and last names, date of birth and self-reported client gender. An additional layer of security was implemented by applying the same cryptographic hash function to further anonymize the original UIDs. The encrypted UIDs from each data set were then provided to the researchers who compared them to identify matches. Only the anonymized matched UIDs were used for this analysis and only aggregated results are being shared.

In a preliminary examination of these data, we compared the use of the Calgary Food Bank by individuals and families who would, at some point during the sample period, enter a homeless shelter to those who would not. To do so, we observed food bank use in each year following a first visit to the Calgary Food Bank. We found that those families and individuals who would at some point enter an emergency shelter made greater use of the food bank than those who would not.

<sup>&</sup>lt;sup>4</sup> The data that Calgary Food Bank provided contained 327,435 UIDs. The ages associated with 15,314 UIDs were suspect due to coding errors on intake and so were excluded leaving 312,121 UID. The food bank data do not distinguish between families and single people. Instead, the data report the number of people, from one to 15, registered for each hamper received. We presume that when more than one person is registered with a hamper received, a family uses that hamper. The length of our sample means someone identifying as single early (or late) in the period may identify as a head of family later (or earlier) in the sample. This resulted in 33,958 UID appearing as representing a single person and a head of family at different points of time in our sample. Thus, in Table 1, the sum of UIDs identified as single and as head of family is reported as 346,079.

On average, the number of visits to the food bank was 41 per cent higher per year. In other words, in our sample the baseline level of food bank use for individuals and families who would eventually use an emergency shelter is noticeably higher than that for individuals and families who would not.

To reach our goal of examining the recent use of food banks by individuals and families entering a homeless shelter for the first time, we need to match these two data sets and further parse these data. We describe these steps next. The appendix provides a flow chart showing the steps taken to arrive at our final sample.

# **MATCHING THE DATA**

After linking the Calgary Homeless Foundation and Calgary Food Bank data sets, we identified 17,504 single individuals who used both single adult shelters and food bank services. We identified 2,903 families in the data who accessed both family shelters and food bank resources. This cross-utilization represents a matching rate, defined as the percentage of homeless shelter users also accessing the food bank, of 31 per cent for single adult shelter users and 59 per cent for family shelter users. Thus, over the respective sample periods, a high portion of those experiencing homelessness also relied on food bank services.

59 per cent of families and 31 per cent of single people using homeless shelters also rely on the Calgary Food Bank.

# FOCUSING ON FIRST ADMISSIONS TO SHELTER

The goal of this paper is to focus on the recent history of food bank use by individuals and families who during our sample period entered the Calgary shelter system for the first time. This requires us to adjust the period of our analysis.

To identify whether an individual or family has entered the shelter system for the first time requires us to deal with the problem of left censoring; that is, the fact that the observation of interest — first admission to the shelter system — may have occurred prior to the start of our sample. To deal with this issue, we implemented a three-year left-censoring period. This decision limits our sample for analysis to start on January 1, 2012. Only individuals and families with no recorded shelter entries in the three years prior to that date are identified as new admissions into the shelter system after January 1, 2012. Using three years of left censoring, we identified 12,246 individuals and 2,113 families from the matched sample who entered the shelter system for the first time between January 1, 2012 and September 29, 2023.

# FOOD BANK USE PRIOR TO ENTERING SHELTER

Of the 12,246 single individuals who entered the shelter system for the first time during our sample period, 7,686 (63 per cent) used the food bank during the five years prior to entering shelter. Of the 2,113 families who entered the shelter system for the first time during our sample period, 1,261 (60 per cent) used the food bank during the prior five years. These 7,686 single individuals and 1,261 families define our sample for analysis. It is noteworthy that prior use of the Calgary Food Bank was the norm for over 60 per cent of individuals and families entering the homeless shelter system for the first time.

Over 60 per cent of individuals and families made use of the food bank prior to entering a homeless shelter for the first time.

# **DEMOGRAPHIC CHARACTERISTICS**

In Table 2, we show the demographic characteristics of all individuals and heads of families entering Calgary's homeless shelter system for the first time. There is no noticeable difference in the comparison of demographic characteristics of those with and without a history of food bank use prior to entering shelter. Looking only at those with a history of food bank use, single adults entering the shelter system for the first time were predominantly those who self-identified as male (65.1 per cent). Most families entering family shelters for the first time and with a history of food bank use were headed by those who self-identified as female (70.6 per cent). The average age of family heads (32.3 years) was noticeably less than that for single adults (38.1 years).

	Single	Single Adult		Heads of Family	
	History of Food Bank Use	No History of Food Bank Use	History of Food Bank Use	No History of Food Bank Use	
Gender:					
Male	5,007 (65.1%)	3,325 (72.9%)	371 (29.4%)	284 (33.3%)	
Female	2,679 (34.9%)	1,235 (27.1%)	890 (70.6%)	568 (66.7%)	
Average Age:	38.1 [12.5]	37.9 [12.9]	32.3 [9.4]	32.5 [8.8]	
Age Category:					
Youth (18-24)	1,185 (15.4%)	755 (16.7%)	296 (23.5%)	166 (19.5%)	
Adult (25+)	6,501 (84.6%)	3,805 (83.4%)	965 (76.5%)	686 (80.5%)	
Sample Size	7,686	4,560	1,261	852	

## Table 2. Demographics of Single Adults and Family Heads Using Shelters for the First Time With and Without a Prior History of Food Bank Use

Note: Numbers in parentheses measure the size of each category as a percentage of the relevant sample; numbers in brackets represent standard deviations. Someone is identified as a youth based on their age on first entry into a homeless shelter.

# THE RESULTS

In this section, we focus on the 7,686 individuals and 1,261 families who used the Calgary Food Bank during the five years before their first entry into the shelter system. Our interest is primarily in observing how their reliance on the food bank changed as they approached the time when they lost housing and were forced to use a homeless shelter. We will also comment on how their use of the food bank changed after first admission into a homeless shelter.

An assumption important for our analysis is that individuals and families were not constrained in their use of the Calgary Food Bank's services. At times during our period of analysis, limits were announced on the number of visits that could be made to the food bank to receive food hampers. In communication with us, the Calgary Food Bank indicated that these announced limits were not binding and were used only as a guideline. The data confirm this as we find many instances of clients accessing services in greater number than the announced limits. A food hamper varies in size in accordance with whether the person is single or a head of family. In the latter case, the size of the hamper depends on family size. Each hamper is intended to provide food for approximately one week.

Food bank use by shelter users is determined by counting the number of food hampers obtained from the Calgary Food Bank during years designated as *time* for each client. The *time* (*t*) variable ranges from period t+1 to period t+5 and from period t-1 to period t-5 with each period representing time relative to the client's first shelter admission. For example, the period between t-1 and  $t_0$  represents the 365 days prior to initial shelter entry. The period between  $t_0$  and period t+1 represents the 365 days following the first admission into the homeless shelter system. The observed value for period t-1 is the average number of food hampers individuals and families obtain during the 365 days prior to them entering the shelter system for the first time.

Figure 1 illustrates how reliance on food hampers changes as individuals and families approach their first shelter admission. Five years prior to first entry into the homeless shelter system, the average individual used 0.97 food hampers and the average family used 1.23 hampers. The number of hampers received by the average individual and the average family increased steadily as that person or family neared their loss of housing. In the 365 days prior to entering housing loss and entering shelter, the average individual received 1.65 hampers and the average family received 2.14 hampers, increases of 70 per cent and 74 per cent, respectively, compared to four years previous.<sup>5</sup> This finding aligns with our hypothesis that financial hardship prompts greater reliance on food banks to conserve income for housing. This pattern underscores the potential of food insecurity to serve as a key indicator =of heightened risk for homelessness.

For the average individual and family, food bank use increased by over 70 per cent during the five years prior to falling into homelessness.

<sup>5</sup> Both increases in hamper use are statistically significant.

Figure 1. Average Number of Food Hampers Used by Shelter Users Over Time, Relative to First Shelter Entry



a) Single Adults (n=7,686)

b) Families (n=1,261)



Note: The vertical line at time  $t_0$  represents the date of first shelter admission. Negative values on the x-axis indicate years before the first shelter admission and positive values on the x-axis indicate years after the first shelter admission. Increases in hamper use are statistically significant.

Food bank use following first entry into a homeless shelter is also interesting. To interpret these patterns, it is important to recognize that the majority of experiences with homelessness are temporary. That is, most experiences with homelessness are short and infrequent, what analysts have described as transitional.<sup>6</sup> Thus, in Figure 1, the data showing the use of the food bank in periods t+1 to t+5 may be mainly describing how they are being used by individuals and families moving frequently between shelters and housing. If following a first stay in shelter, single adults and families thereafter move between shelters and housing, their reliance on food banks may fall in proportion to the time they spend in shelter. Thus, the different patterns for single adults

<sup>&</sup>lt;sup>6</sup> For an early derivation and discussion, see Kuhn and Culhane (1998). For evidence confirming this result using Canadian data, see Aubry, Farrell, Wang and Calhoun (2013) and Jadidzadeh and Kneebone (2023).

and families of food bank use following first entry into shelter may reflect the different patterns of shelter stay by the two groups. In future work, it will be useful to observe how food bank use varies for individuals and families according to how frequently they must rely on homeless shelters following their first entry.

The calculations reported in Figure 1 describe average values of the number of food bank hampers that are taken from a wide distribution. Table 3 reports the minimum, maximum and mean number of food bank hampers provided to single adults and to families in each of the five years prior to their first entry into a homeless shelter. The implication is that the size of the increased reliance on food hampers shown in Figure 1 underrepresents what some individuals and families experience.

	Time	Minimum	Mean	Maximum
Single Adults	t-5	0	0.97	10
	t-4	0	1.05	11
	t-3	0	1.18	24
	t-2	0	1.38	23
	t-1	0	1.65	24
Families	t-5	0	1.23	11
	t-4	0	1.35	8
	t-3	0	1.49	16
	t-2	0	1.76	23
	t-1	0	2.14	20

## Table 3. The Distribution of Food Bank Hampers Prior to Entry in a Homeless Shelter

Figure 2 examines how changes in food bank use vary by self-reported gender. Among single people, women rely on food banks more than men but exhibit a similar pattern of changing food bank use before and after first entry into a homeless shelter. Though the difference is less pronounced, families headed by women similarly rely on food banks more than families headed by men before and after first entry into a homeless shelter. Some of this difference may be due to differences in the size and composition of female- versus male-headed families.





a) Single Adults

b) Families



Note: The vertical line at time  $t_0$  represents the date of first shelter admission. Negative values on the x-axis indicate years before the first shelter admission and positive values on the x-axis indicate years after the first shelter admission. Increases in hamper use are statistically significant.

Figure 3 reveals a consistent pattern of increasing food insecurity in the years leading up to initial shelter entry by age groups for single adult and family shelters. Among single adults, younger adults (18-24) exhibit slightly lower food bank reliance than older adults (25+) throughout the analyzed period. Among families, the sharpest increase in food bank usage occurs among families with adult heads who were aged 25 years and above immediately after shelter entry. However, the overall difference between youth and adults is less pronounced in family shelters than in single adult shelters.





#### b) Families



Note: The vertical line at zero (0) represents the date of the first shelter admission. Negative values on the x-axis indicate years before the first shelter admission and positive values on the x-axis indicate years after the first shelter admission. Increases in hamper use are statistically significant.

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# **DISCUSSION AND CONCLUSION**

Our focus has been on describing how single adults and families use a food bank in the five years prior to them entering a homeless shelter for the first time. Our presentation has been simple in that it describes the choices of the average single adult and the average family. Extensions of this analysis will focus more on the characteristics of individual adults and individual families so that we might more precisely relate specific individual and family characteristics to food bank use prior to losing housing. Our samples are large enough to investigate the possibility of comparing matched pairs of families and individuals sharing the same demographic profiles but with only one eventually entering a homeless shelter.

Extensions of this work will also pay attention to the distribution of hamper use by clients who eventually use homeless shelters. Thus, while the average number of hampers used by a single person in the year before entering a homeless shelter was 1.65, providing food for less than two weeks, the maximum number was 24 hampers which provide food for 24 weeks.

While our presentation should be understood to be a preliminary analysis of a unique data set, it nonetheless reveals important results. The first is that we confirm the description offered by others that problems such as homelessness and food insecurity are rarely experienced in isolation from one another. By linking two administrative data sets, we confirm a high rate of cross-utilization of homeless shelters and food banks. In our sample, nearly 60 per cent of families and over 30 per cent of single adults using homeless shelters also used the food bank. This high rate of common usage suggests the existence of common clients served by many parts of the social safety net. It speaks to the need for co-ordinated responses by government policymakers and charitable organizations. Sharing data and enabling data linkages make it possible to identify key points and times of intervention and to properly assess the cause and effect of interventions.

A second key result is confirmation of speculation that prior to losing housing and entering a homeless shelter, individuals and families struggle to maintain housing. Kneebone and Wilkins (2024) speculate that because food banks provide a close substitute to food purchased in retail outlets, it might be expected that individuals and families under financial stress will increase their reliance on food banks to preserve limited income for the payment of rent.<sup>7</sup> The evidence we present supports that speculation. We report that the average individual and the average family both increased their use of a food bank by over 70 per cent during the five years prior to falling into homelessness. This suggests that for many, homelessness is not a sudden

Our results suggest that for many individuals and households, homelessness is not the result of a sudden catastrophic event but rather a steady worsening of one's circumstances.

catastrophe, but one that is the result of a steady worsening of one's circumstances.<sup>8</sup>

This suggests, in turn, that there may be opportunities for well-designed and well-timed interventions that may prevent homelessness from being experienced. This is a possibility we will study in extensions of this research.

<sup>&</sup>lt;sup>7</sup> Charities providing clothing and furniture similarly provide close substitutes to purchases made in retail stores. Expanding the number of administrative data sets linked in ways we have described in this paper would enable testing of still other hypotheses.

Jadidzadeh, Kneebone and Wilkins (2024) speculate this is why there is a lack of contemporaneous correlation between changes in rent-to-income ratios and the number of people experiencing homelessness. Any income or expenditure shock may set in motion a prolonged effort to conserve income using charities that may prevent or only delay an eventual fall into homelessness.

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# **APPENDIX**

The flow chart illustrates the steps required to arrive at our final data sample.



Within the two original data sets, we found 17,504 single people and 2,903 families who appeared in both (matched). Using a three-year left censor on the matched data, we determined the number of single people and families who had entered a homeless shelter for the first time (first admissions). Focusing only on the five-year period prior to each person's and each family's first admission to a homeless shelter, we identified the number who used, and did not use, the food bank during those five years. Those 7,686 individuals and 1,261 families are the subject of our analysis.

# **About the Authors**

Ali Jadidzadeh is a researcher with a Ph.D. in Economics from the University of Calgary, where his focus was on applied econometrics. He a Research Fellow at the School of Public Policy, University of Calgary. As a member of the social policy team at the School of Public Policy, his research primarily centers around homelessness-related issues. He applies his empirical skill sets to work with large datasets to investigate the effective design of Housing First and emergency shelter programs aimed at benefiting and supporting those without permanent housing. His other research interests encompass issues related to energy economics.

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