Inter-sectoral Collaborations

3.3

HOMELESS IN, HOMELESS OUT AND HOMELESS ZERO USING SYSTEM DYNAMICS TO HELP END HOMELESSNESS

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If you understand the dynamics of stocks and flows – their behavior over time – you understand a good deal about the behavior of complex systems.
– Donella Meadows (2009: 19)

How many people do you have to house to end homelessness? To answer that question, we have to answer three related questions: How many people are presently homeless? At what rate are people becoming homeless? And, importantly, how long will it take?

This paper develops a method for analyzing flows into and out of homelessness that will allow users to see where investments need to be targeted and what level of resource is required to end homelessness within their community over a given time frame. Edmonton will be used as a case study to build a model for analysis. As one of the 7 Cities in Alberta, it was a leader in instituting a Housing First approach and has seen parallel reductions in homelessness. Edmonton is a pertinent example because a few – but not all – of the elements of the required data for this model sit under one organization. By looking at which components of the data are held by which actors, we can get a sense of who needs to be at the table and willing to share their knowledge in order to develop a robust strategy within a municipality.

Edmonton launched a 10 Year Plan to End Homelessness in April 2009 and designated Homeward Trust Edmonton as the organization responsible for coordinating the plan. Between then and October 2014, when the most recent Homeless Count occurred, Homeward Trust and the agencies it supports housed 3,300 people. Yet the number of people experiencing homelessness only declined from 3,079 to 2,118 between the 2008 and 2014 counts (Homeward Trust Edmonton, 2015). What factors caused this difference and what can we learn from them?

STOCKS AND FLOWS

The number of people counted as homeless in Edmonton is a 'stock'; the two observation points presented here are October 2008 and October 2014. The number of people housed through the Housing First program in the period between then is a 'flow' out from the homeless population.

A stock is a quantity at a point in time. A flow is the movement of things into or out of a stock. The classic case is a bathtub: if I have a half-full tub, that is a stock of water. If I turn on the tap, I create an inflow, which will change the stock as time goes by. If I open the drain at the same time, I create an outflow. Five minutes later, if I observe the tub again, I will know whether the rate of inflow or outflow is greater by whether the tub has gained water or lost it.[1] I will not, however, know what the rate of inflow and outflow are (and I will also have wasted several litres of perfectly good water).

The problem with stocks and flows is that humans are notoriously bad at understanding how they operate and what their effects will be; as a neophyte in systems dynamics, I am no exception. I have to stare long and hard at the parameters of a simple system to work out its effects and I quickly turn to electronic assistance if the flows change over time. Thankfully, I am in good company – even the brightest minds tend to struggle with these concepts. In one MIT graduate class, only 36% of students – most with math, engineering, science or economics backgrounds – correctly identified the behaviour of a system with only one stock, one outflow that did not change at all and one inflow that changed in a linear manner (Sterman, 2002). When we start to add in feedback loops, where initial actions or processes end up affecting themselves over time, outcomes become very hard to predict without the support of computer simulations. However, this understanding is vital since ending homelessness requires, by definition, that outflows from homelessness exceed inflows for a period long enough that the stock is reduced to zero – and that outflows are maintained at the same level as inflows thereafter.

A SIMPLE MODEL OF HOMELESSNESS

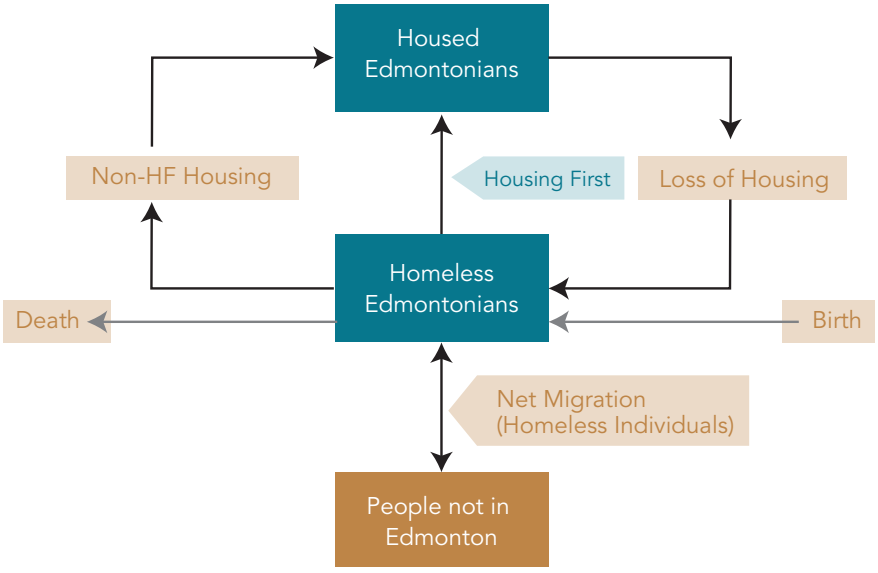
So how many people do you need to house to end homelessness? In order to answer this question, we need to build a model of the elements involved. Most of the time, those of us working in the homeless-serving sector only report the number of people housed through our programming and, at best, the number of people experiencing homelessness during a point-in-time count. If we only use that information, our model would look something like the image in Figure 1a: There was a fixed stock of homeless Edmontonians – 3,079 according to the 2008 count – and we simply had to house them all (in these diagrams, a box represents a stock and an arrow with a valve represents a flow). Clearly that is not correct, as we found housing for 3,300 people between 2009 and 2014.

1. It is important to note that this is only the case if the tap and drain were opened at the same time and the rate of flow is constant throughout. Imagine I turn on the tap first, wait a minute, then pull the plug and wait four more minutes. If I end up with more water than I originally started with, there is not sufficient information to conclude whether inflow or outflow is greater. I would have had to measure the tub again at the time when I unplugged the drain to make that conclusion.

While keeping the model very simple, we can make it complete[2] by adding in a few additional flows and one more stock, as in Figure 1b. Now we can see that while some people are finding housing, others are losing theirs. People are also moving into and out of the community, some of whom do not have housing. Two-way flows can either be shown as two separate arrows, as in the top half of the diagram about new housing or loss of housing, or as a single net flow, as in the bottom half about migration.

FIGURE 1 A *An Incomplete Model of Homelessness*

FIGURE 1 B *A Simple, Complete Model of Homelessness*



2. This representation assumes that all people can be classified as housed or homeless, which requires assigning those Provisionally Accommodated to one group or the other (e.g., those currently incarcerated, in hospital, staying in a motel or 'couch surfing' with no permanent address). A more detailed model can examine this explicitly, if it is important to the dynamics of homelessness, as it usually is.

REFINING THE MODEL

This representation is useful to us in its ability to tell us about the system: what we know, what we do not know and the most promising places to target investments to reduce homelessness overall. To do this, we will need a bit more detail in our model. The data from periodic homeless counts helps to estimate the population at a point in time (stock) and to estimate the aggregate of all flows between measures, much as checking the level of the bathtub told us whether we had more or less water overall, but not much about the flows. Since there were only two flows in that example, knowing their levels was not all that important. When we begin to apply numbers to our model, we may need to divide some of these flows to examine key areas of interest (e.g., how many people are being released from correction services into homelessness?) or to align with the way we capture data, where we know something about part but not all of a flow (e.g., we already separated out people housed through Housing First programs because we have the data to measure that flow).

We also need to incorporate things we already know about the system from prior research. Kuhn and Culhane (1998) identified three types of shelter users: transitionally homeless, who have relatively short and less frequent stays; episodically homeless, who have relatively short but more frequent stays; and chronically homeless, who have relatively few stays but for very long periods (sometimes the entire length of the study). Based on their work, several studies of shelters in Canadian and American cities – most recently in Calgary – have shown that this pattern holds across a variety of locations and with both singles and families (Aubry, Farrell, Hwang & Calhoun, 2013; Culhane, Metraux, Park, Schretzman & Valente, 2007; Kneebone, Bell, Jackson & Jadidzadeh, 2015).

One of the primary challenges of system dynamics analysis is selecting a scope that captures all of what is important to the outcome of interest, but does not get lost down the rabbit hole offered up by tangentially related variables.

Homeward Trust's focus is on helping to permanently house chronically and episodically homeless individuals.[3] Our model should reflect this focus. In Alberta, the term 'chronically homeless' includes the episodically homeless; more precisely, it includes anyone who has been homeless for at least a year continuously or has had four episodes of homelessness in the past three years. For simplicity, this definition will be used throughout the rest of the paper.

It is worth noting that those staying in shelters do not represent the entire homeless population: there are some notable differences among people who are sheltered, people sleeping rough and those who are provisionally accommodated (Homeward Trust Edmonton, 2015). As such, it is possible that the typology established by Kuhn and Culhane would not hold for unsheltered or provisionally accommodated populations. The best available indication in Edmonton comes from the Homeless Connect event,[4] where sheltered and unsheltered populations have relatively similar shares of chronically homeless individuals, with the unsheltered having a slightly higher figure (74% versus

3. A few other priority groups are also included, notably families with children, women fleeing domestic violence and youth. These groups could be jointly modeled, but this paper will focus primarily on chronically homeless people.

4. More details on this data source are provided below.

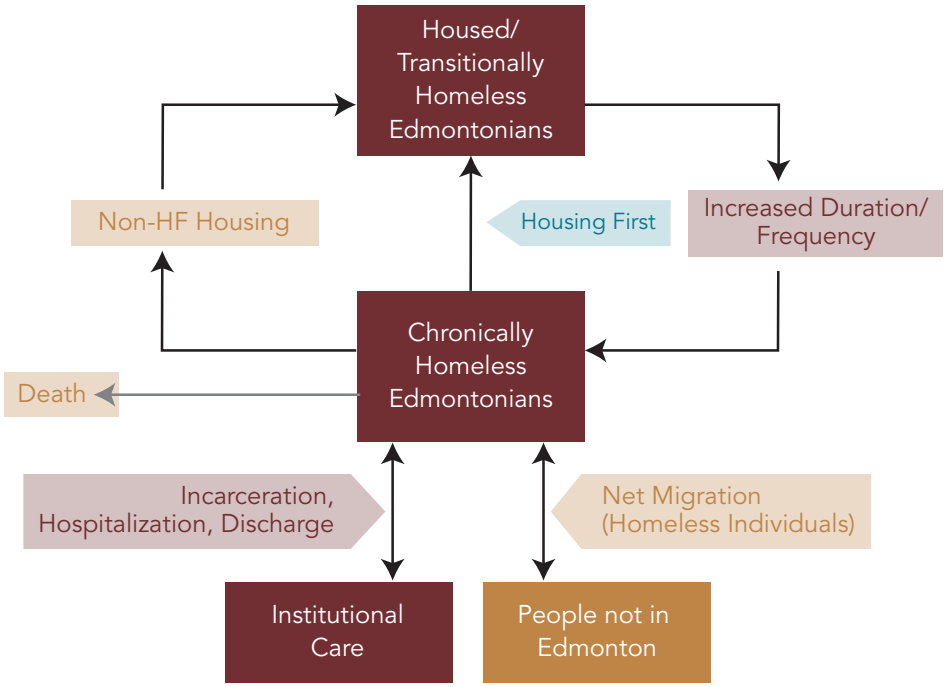
67%, p<0.1). While this is fairly weak evidence in support of the typology, we will continue to use it to guide this paper given its replicability across locations and the way it underlies many Housing First approaches.

One of the primary challenges of system dynamics analysis is selecting a scope that captures all of what is important to the outcome of interest, but does not get lost down the rabbit hole offered up by tangentially related variables. One rule of thumb in causal loop diagrams is to ignore variables where a doubling or halving would not significantly affect the outcome of interest (Kim, 1992). Because the transitionally homeless move into and out of homelessness relatively rapidly, they make up the majority of the inflows and outflows, but since this group is not the core of our focus, it does not affect our key outcome of interest.

Instead, we will focus on those who are chronically homeless.[5] We will now bring in a revised model that represents this population, Figure 2, to use as our basis of analysis.

Along with the focus on the chronically homeless, three additional changes have been made. We have added a dimension that captures chronically homeless individuals moving into or out of institutional care, as anecdotal evidence suggests that this is a significant flow and there are data sources that may be able to capture most or all of it. Secondly, instead of loss of housing beginning an instance of homelessness, we are now focused on people who are initially transitionally homeless increasing their duration or frequency of homelessness and becoming chronically homeless. Finally, we have removed births from the diagram, as it takes time to become chronically homeless, as spelled out in this definition, so one is not born chronically homeless.

FIGURE 2 *A Model of Chronic Homelessness*



5. A model looking at all people experiencing homelessness, instead of just the chronically homeless, would likely have to limit itself to those who interact with the homeless-serving system in some way (e.g. staying at a shelter), since no data would be available on some of the hidden homeless (such as couch surfers).

HOW MUCH OF THIS PROCESS DO WE UNDERSTAND?

We will now examine each of the components of this model to see what we do and do not understand, where additional data is available and what we can conclude about flows into and out of chronic homelessness.

Chronically Homeless Edmontonians

The first place to start is with the stock of chronically homeless individuals: Most communities in Canada have more information about the stock of homeless people than flows into and out of homelessness and Edmonton is no exception.[6] In Edmonton, homeless counts have been conducted every two years since 2002.[7] The 2014 Homeless Count found 2,307 Edmontonians who were homeless. While this includes all of the shelter beds in the city, we know this is an undercount of the unsheltered and provisionally accommodated: we do not find absolutely everyone who is experiencing homelessness and some of those we do approach decline to participate. However, we can estimate the undercount by responses to a large survey conducted three days later.

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Since 2008, Homeward Trust has also been conducting a biannual service event called Homeless Connect. With more than 2,000 participants in October 2014 – 85% of whom completed an extensive survey – this gives us some additional insight into the characteristics and size of the homeless population, as participants were asked if they had been approached during the count three days earlier. Approximately half of those who participated and completed surveys (804) were presently homeless and answered a subset of questions about their experience with homelessness, including duration and frequency.

At Homeless Connect, 39% of people who were sleeping rough reported having participated in the count, as did 27% of those provisionally accommodated and 53% of those staying at shelters.[8] Since administrative data was used for the shelter count, we do not need to modify that figure, but if we assume that we only spoke to 39% and 27% of the other groups, that would give us a stock of about 4,200 people experiencing homelessness. These figures are not completely reliable for three reasons: the participants at this event are not perfectly representative of the homeless

6. London, England has developed a simple system based on staff observation to estimate flows of rough sleepers (CHAIN, 2014) and several American cities have estimated inflows through the Zero: 2016 campaign.

7. Four prior counts were conducted in 1999 and 2000, but they were somewhat smaller in scope and were not conducted in October, so are excluded for comparison purposes.

8. The results are virtually identical when we limit to just those who were chronically homeless, as the share of chronically and transitionally homeless individuals who participated in the count was not significantly different.

population, there may have been some changes in homeless status or migration in the intervening days and some participants may just forget that they were asked a few questions earlier in the week. However, we know what our survey response rate was for the shelter count and we can compare it to the share of individuals at Connect who said they were staying in shelters and had participated in the count to get an idea of the measure's reliability. The number of people who responded to the survey portion of the Homeless Count and said they were staying at a shelter (and so should have indicated such if they were at Connect) was 67% of the total staying at shelters on the night of the Homeless Count. This is a variance of 26% (or 14 percentage points) from the actual response rate at Connect. If the same level of under-reporting exists in the other two categories, this would suggest that we actually covered 49% of rough sleepers and 34% of the provisionally accommodated in the count, which gives a population of about 3,700. While only an estimate, this gives us a range of values – 3,700 to 4,200 – that is likely close to the actual stock of people experiencing homelessness in Edmonton in October 2014. This range exceeds the point estimate that one study generated by applying the plant-capture ratio in Toronto to Edmonton's data, but falls well within their 95% confidence interval (McCandless, Patterson, Currie, Moniruzzaman & Somers, 2012).

To arrive at the stock of chronically homeless individuals, we will also need to calculate the share of people experiencing homelessness who are chronically homeless. Unfortunately, the 2014 count in Edmonton did not include a question about duration of homelessness, so we cannot calculate the share of chronically homeless individuals directly. However, a certain amount can be inferred from other data sources. Alberta's 7 Cities all conducted Homeless Counts within a week of each other, most on the same night, and five of them asked about chronically homeless status. The range of results was bounded by Medicine Hat with only 35% of homeless respondents being chronically homeless and Calgary with 55%. At the Homeless Connect event in Edmonton, 67% reported being chronically homeless, though this event may be more likely to reach chronically homeless individuals and therefore overstate the results. Given Edmonton's greater similarity to Calgary than the five smaller cities and the results of the Connect event, a betting researcher would be tempted to wager on the upper end of the range, but a firm conclusion will not be available until a question on chronic homelessness is included in the next count. Nonetheless, as a best estimate, applying a factor of 50–55% to the estimated homeless population gives a range of 1,800 to 2,300 chronically homeless individuals in Edmonton.

One other large source of data on the stock of chronically homeless people exists, but has not yet been utilized. Several shelters in the city keep track of clients over time. As with the aforementioned studies in cities across the continent, it would be possible to estimate the number of chronically homeless people staying at shelters over a period of time. Such a study could have additional benefits, as highlighted below in the section on Increased Frequency/Duration of Homelessness.

Housing First

We also know a lot about the flow of chronically homeless people through the Housing First program. Since 2009, Homeward Trust has helped to house more than 1,690 chronically homeless adults, including 415 in the last fiscal year (April 2014 – March 2015).[9] Since dependents are not interviewed, we do not observe directly whether they are chronically homeless, so we assume they have the same status as their caregivers: this gives us an estimate of about 170 dependents in chronically homeless families. As such, we will approximate the number of chronically homeless clients and dependents housed last year at 570.

To develop a net outflow from chronic homelessness, we also need to know how many people returned to homelessness from the Housing First program. During the same year, about 295 formerly chronically homeless clients and dependents left the program: 150 were in stable housing when they left, 130 were not and 15 passed away while housed.[10] Subtracting these 130 from those housed during the year produces a net outflow of 450.

Some of the clients who exited the program successfully will since have returned to homelessness and some of those who exited unsuccessfully will have achieved housing or never have lost it (a client who refuses further service without completing the program is considered an unsuccessful exit, even if they are still housed). Unfortunately, relatively little information is available on rates of housing retention after the program, as it is often difficult to contact former clients for follow-up interviews, especially those who left the program unsuccessfully. If privacy legislation allows, generally the best supplementary source of data is from provincial income support and disability programs, as most clients are on income assistance. Australia has one of the better systems for tracking this data across government and non-profit delivery systems (Pinkney & Ewing, 2006).

Migration

Those who had arrived in the city within the last year – and especially within the last six months – were almost three times more likely to be experiencing homelessness than other Edmontonians (Homeward Trust Edmonton, 2015).

From the count and Connect, we actually have a reasonable picture of the flow of migrants into chronic homelessness. The Homeless Count report showed that those who had arrived in the city within the last year – and especially within the last six months – were almost three times more likely to be experiencing homelessness than other Edmontonians (Homeward Trust Edmonton, 2015); however, this trend disappears as soon as the one-year mark is eclipsed. Homeless Connect participants displayed identical trends and, further, these two groups reported having participated in the count at the same rate, suggesting that the population at Connect is a fair representation of new arrivals.

Connect participants were also asked about their duration of homelessness. Participants who had been in the city for less than a year were much less likely to report being chronically homeless than those who had been here more than a year (53% versus 72%, $p<0.01$). Applying this ratio to the results of the count suggests

9. This only includes Homeward Trust-funded Intensive Case Management, Rapid Re-Housing, Assertive Community Treatment and Permanent Supportive Housing programs. All figures are provisional, pending end of fiscal year data verification.

10. The Assertive Community Treatment programs are not included in this portion of the analysis.

that in-migration annually accounts for about 12% of the chronically homeless population. This is still double the share of the overall Edmonton population normally comprised by recent arrivals and suggests a potential target population for intervention. However, it also tells us that recent arrivals experiencing homelessness are more likely to be able to resolve their own issues, as fewer are chronically homeless presently and the people who have been here more than a year are not overly represented among the homeless.[11]

It also tells us that recent arrivals experiencing homelessness are more likely to be able to resolve their own issues, as fewer are chronically homeless presently and the people who have been here more than a year are not overly represented among the homeless.

We have no direct measure of chronically homeless people migrating out of Edmonton. National population estimates show that in 2012/2013 the Edmonton Census Metropolitan Area gained 64,300 people from migration and lost 32,900, putting outflow at about three percent of population or 50% of inflow (Statistics Canada, 2015a; Statistics Canada, 2015b) As we have seen, though, characteristics of the general population do not always accurately reflect those of the chronically homeless. Our next best possibility would be to look at the rate of people in the Housing First program who are moving out of the city. We expect this to be biased downward because these people have achieved independent housing and have more to leave. For clients who were active on January 1, 2014, this figure was three percent over the course of 2014, the same as the rate in the general population. Our best guess for out-migration would then have to be three percent, but it could easily be as high as six percent if out-migration among the chronically homeless is higher than among the general population, as it is with in-migration. This gives us a net migration rate of six to nine percent, or 110–220 people annually when applied to the estimate for the stock of chronically homeless Edmontonians. Increased precision, or even solid confirmation of this range, will remain very difficult to achieve for the foreseeable future.

Deaths

Every year, the Edmonton Coalition on Housing and Homelessness conducts a memorial for homeless people who have died, with a list compiled by service agencies. In 2015, they reported just under 50 deaths during the previous year, a number similar to the average over the last 10 years (Ostad, 2015). While it is possible that not all of these people are chronically homeless, it is also likely that a few people are missed. Given that this is one of the smaller flows, that bit of variability will not be very important to the overall stock of homeless people.

11. It is possible that the pool of people experiencing homelessness at one- to three-years in the community is not larger because some chronically homeless migrants come and go from the city, appearing to have just arrived whenever they are interviewed. Because this is a cross-section and not longitudinal data, it is impossible to know the extent of this phenomenon.

WHERE IS COLLABORATION NEEDED?

We now have a reasonable picture of one stock, every two years, two outflows and one inflow. This is the extent of data that is available in-house to Homeward Trust; while research collaboration on the previous items in this section could add significant precision to measurements, collaboration on the following items is necessary to have any picture of these flows at all.

Entry Into and Discharge From Institutional Care

This is an area where excellent data exist, but we do not have access to that data. In previous Homeless Counts, Homeward Trust has received aggregate numbers of people discharged to No Fixed Address on the day of the count (inflow), whereas the Calgary Homeless Foundation has sought to find out everyone who was in a corrections, health or rehabilitation facility and had No Fixed Address at intake (stock).

The net flow into institutions is likely slightly positive, as it is typical for most facilities to be roughly constant in size (i.e., inflow equals outflow) and a few people will pass away while in care (i.e., not be discharged into homelessness). However, some previously homeless people may be supported to find housing and some transitionally homeless may cross over the one year mark without a home and thus become chronically homeless while institutionalized.

Strategy number nine in the provincial plan to end homelessness is to "Develop approaches to prevent provincial systems from discharging clients into homelessness" (The Alberta Secratariat for Action on Homelessness, 2008). Different ministries in the Government of Alberta have undertaken several pilot projects to this end, but there are still great strides to make. A partnership between Homeward Trust and Alberta Health Services or the Ministry of Justice and Solicitor General could shed light on inflows and outflows, provide a mechanism for tracking outcomes and set the stage for a concerted effort to move discharges to homelessness toward zero in the city.

Increased Duration/Frequency of Homelessness

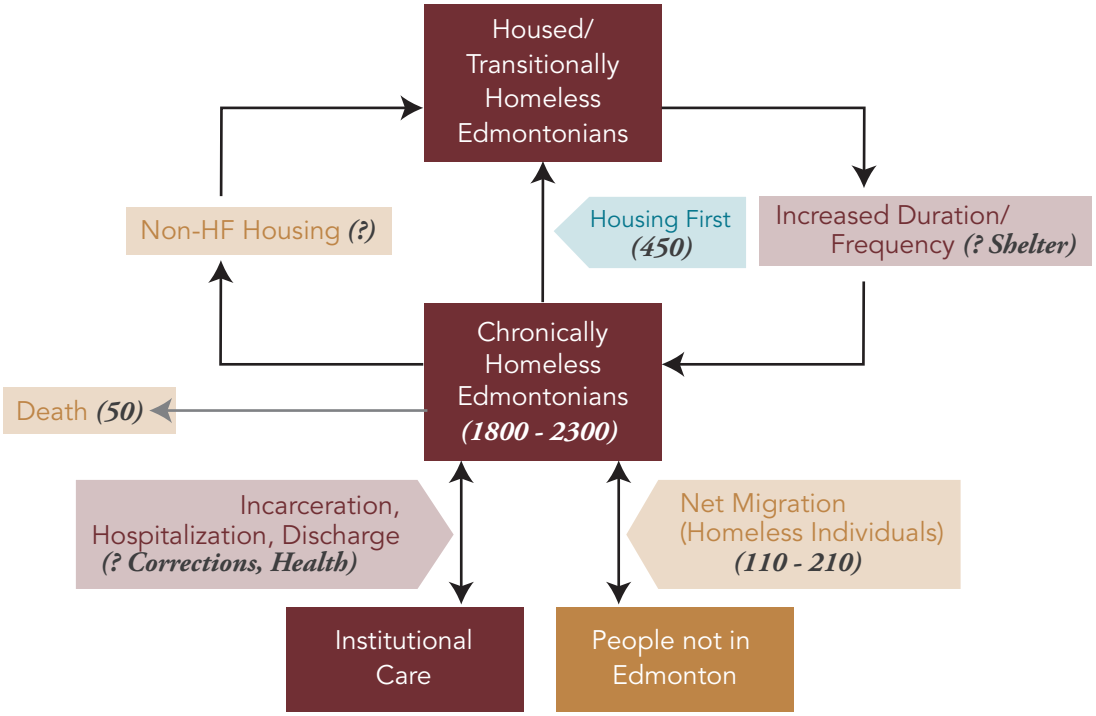
Another area where reasonable data exists but is not available to Homeward Trust concerns the transition from transitionally homeless to chronically homeless. Over the last six years, the share of homeless people staying in shelters or short-term supportive housing has increased significantly as the number of rough sleepers has fallen (Homeward Trust Edmonton, 2015). An extension of the previously proposed study replicating Kuhn and Culhane could include an additional year of data to examine how many users initially classified as transitionally homeless move into the chronically homeless category over the course of that year.

There are also programmatic advantages to this exchange of data. All of the major shelter providers are also Housing First agencies and so are natural intervention points for housing chronically homeless individuals in shelters. However, as not all clients will connect with programs in shelter, a connection to Homeward Trust, which serves as a coordinator among Housing First providers, would allow increased targeting of that population for permanent housing.

Non-HF Housings

Finally, we will never know the extent of housing outside of the Housing First program: many of these interactions occur entirely privately, through family reunification or individual initiative with the support of family and friends. If the rest of the model is well estimated, it would be possible to approximate the combined flow of people into housing and out of the community, our two major unknowns, based on changes in the stock between Homeless Counts.

FIGURE 3 *A Partially Calibrated Model*



ALL MODELS ARE WRONG, SOME ARE USEFUL

Having looked at each of our stocks and flows, we can now get an overall picture of the system of chronic homelessness in the city, shown above in Figure 3. This model is not a precise depiction of the exact stocks and flows of chronically homeless Edmontonians – no model is. However, it does highlight areas for cooperation with other agencies and ministries.

As mentioned earlier, ending homelessness requires, by definition, that outflows from homelessness exceed inflows for a period long enough that the stock is reduced to zero – and thereafter outflows are maintained at the same level as inflows. The introduction of Edmonton's Housing First program in 2009 added a significant outflow that – concurrent with the financial crisis – initially created a large reduction in the homeless population. That population has since stabilized, which means that other net flows into homelessness have increased recently. One explanation posited for this was an increase in pressure on the housing market (Homeward Trust Edmonton, 2015). Our diagram shows that this is a possibility, but so is an increased flow of net migrants. Additional data from shelters could help to determine which cause is stronger and help us to target resources effectively.

So how many people does Edmonton need to house each year to end homelessness by 2019, the end of its 10-year mandate? If we have shelter data, we can make a reasonable estimate. With that information, we could estimate the rate at which people become chronically homeless. This figure – along with all of our other flows and changes in the stock over the past six years – then allows us to estimate how many people achieved housing outside of Housing First.

So how many people does Edmonton need to house each year to end homelessness by 2019, the end of its 10-year mandate?

If we have shelter data, we can make a reasonable estimate.

We can set up a linear equation from this model, where X is the number housed through Housing First per year, Y is the number housed outside of Housing First and Z is the number becoming chronically homeless. For simplicity in this model, we use rounded numbers near the midpoints of the estimated range of people who are presently chronically homeless and net migration into chronic homelessness.[12]

In this example, if 100 people became chronically homeless every year and 50 chronically homeless people become housed, Homeward Trust would have to house about 650 chronically homeless people per year to eliminate chronic homeless within four years – or affect one or more of the other flows into and out of chronic homelessness. If we expect that these rates will change over time (and given the recent change in Alberta's economy, they probably will) we can model more complex systems of equations that account for these changes in a program like Vensim.[13] Since our model also includes some imprecise estimates, we can repeat the exercise using the limits instead of the midpoints to determine the bounds of the range for our target variable.

An extension of our model would allow us to look at major external factors that influence each of these flows, such as economic growth. Figure 4 shows an example of what this could contain, but the development of that sort of model is beyond the

$$\textit{Years} = \frac{\textit{Present number of chronically homeless}}{\frac{\textit{HF}}{\textit{yr}} + \frac{\textit{Non HF}}{\textit{yr}} + \frac{\textit{Deaths}}{\textit{yr}} - \frac{\textit{Net migration}}{\textit{yr}} - \frac{\textit{Becoming homeless}}{\textit{yr}}}$$

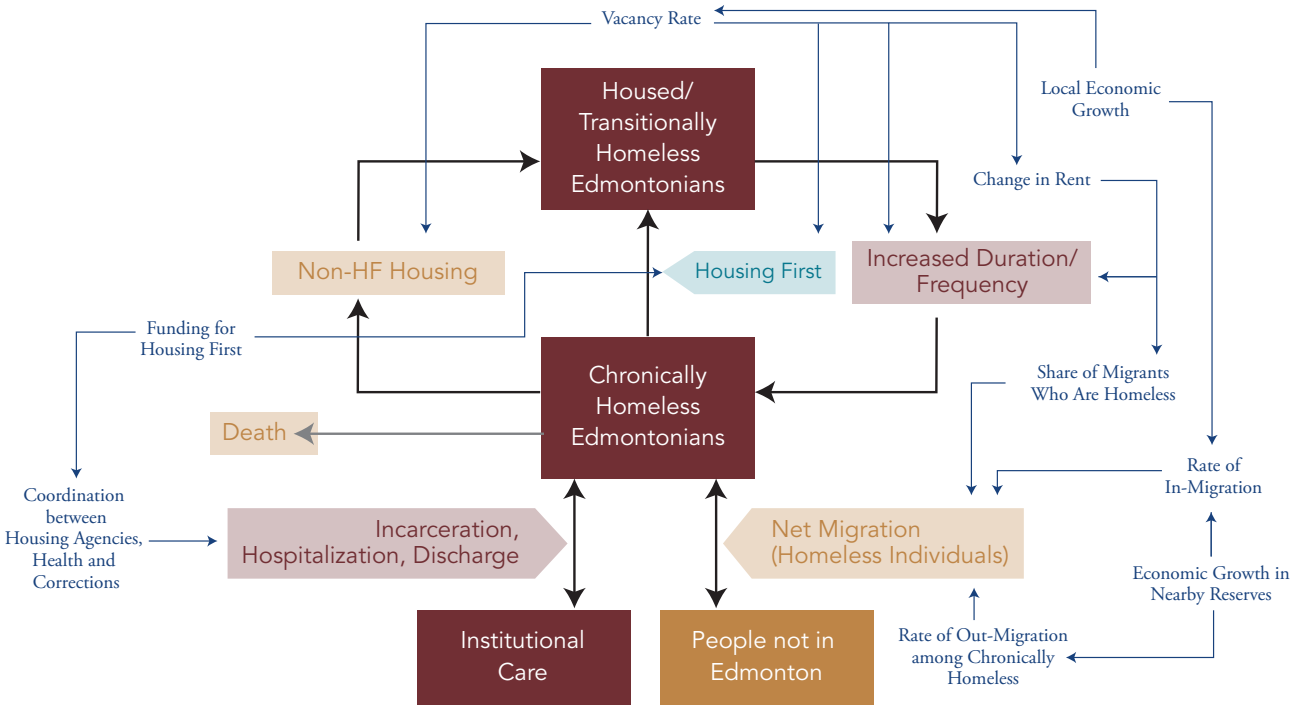
$$4 = \frac{2000}{X + Y + 50 - 150 - Z}$$

$$X = 600 - Y + Z$$

12. The number of people moving into and out of institutional care do not affect the total, since they are considered homeless in either case.

13. Deaths would also be better represented as a percentage of the chronically homeless population. As this population falls, there should be fewer people dying on the streets.

FIGURE 4 *Example of Factors Influencing Rates*



scope of this paper. This level of model, however, would enable a level of predictive power that could forecast how large the flow of people through a Housing First channel would need to be to maintain or reduce chronic homelessness and could help to determine the required resources to achieve that goal.

With the existing model, we can see that additional information on flows into chronic homelessness from hospitals, corrections facilities and shelters could nearly complete our understanding of the movement into and out of chronic homelessness. Each of these areas is a potential leverage point for increasing the flow out of – or reducing the flow into – chronic homelessness. Coordinating organizations like Homeward Trust need to determine where the largest flows are and what their ability to intervene is in order to tip the overall system flow from zero to negative or to accelerate the rate of decline in the homeless population.

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Any community with this data can create realistic targets for outflows (housings), reductions in inflows (e.g. migrants arriving without homes) and a time frame for eliminating homelessness. Such analysis could prove useful in many other communities, especially those deciding where to allocate resources.

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