Policy Brief

"Predicting and Reducing Homelessness in Allegheny County"[1]

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More Housing, More Homelessness: What's Going On?

In the last eight years, the number of homeless Americans has grown by more than 200,000, a 40% rise (de Sousa and Henry, 2024). The policy response has been substantial: over that same period, the supply of subsidized housing nearly doubled, and yet the problem kept getting worse. This is puzzling, because the programs themselves work: people who receive these subsidies reliably stop being homeless (Gubits et al., 2018; Ortuzar, Phillips and Sullivan, 2025). So why is the problem still getting worse?

The answer is that it matters greatly who gets the housing. A unit going to someone who would have left shelter within weeks does nothing to reduce homelessness; a unit going to someone facing years without housing does, and lastingly. When housing doesn't consistently reach those who need it most, much of that investment is wasted. For example, adding 100 subsidized housing units reduces the homeless population by only about 10 (Corinth, 2017). But it doesn't have to be this way.

We use detailed records from Allegheny County, Pennsylvania to show how often housing fails to reach those who need it most, who is being left behind, and how to identify those people before their homelessness becomes long-term.

What the Data Show

Homelessness looks very different up close than it does in the aggregate. For most people, it is a short-term crisis that resolves on its own: the median shelter stay is about two weeks, and fewer than 10% of individuals are in shelter 12 months from the start of their stint.

[1]The working paper is available at SSRN 6315661. The findings and conclusions expressed here are solely those of the authors and do not reflect the official positions of Allegheny County Department of Human Services.

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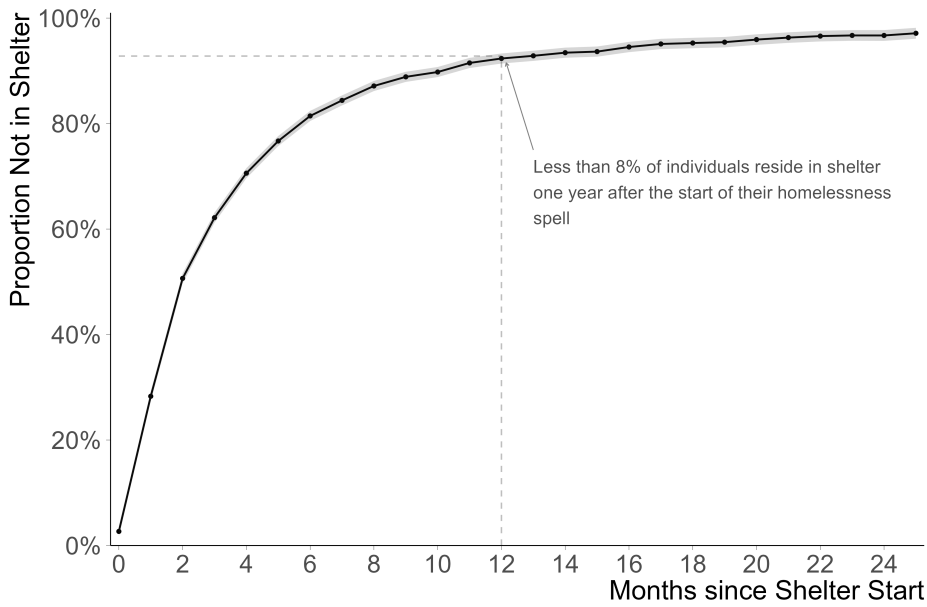

Figure 1: Share of shelter entrants no longer in shelter, by months since entry.

But this small minority who stays longer drives the bulk of shelter use: 20% of users account for 64% of all bed-days.

At the same time, arranging housing is a slow process: navigating paperwork, securing landlord approval, and coordinating move-in can take months. Since most people leave shelter within weeks, most would be gone by the time a unit could be ready, and engaging them in the process in the meantime may actually extend their stay in shelter.

The effect of housing itself, though, is not in doubt: people who receive housing assistance reliably stop being homeless (Aubry, Nelson and Tsemberis, 2015; Stergiopoulos et al., 2015; Gubits et al., 2018; Ortuzar, Phillips and Sullivan, 2025). Our data tell the same story: shelter use drops sharply the moment people move in and stays down, as shown in Figure 2. Housing works. The question is who gets it.

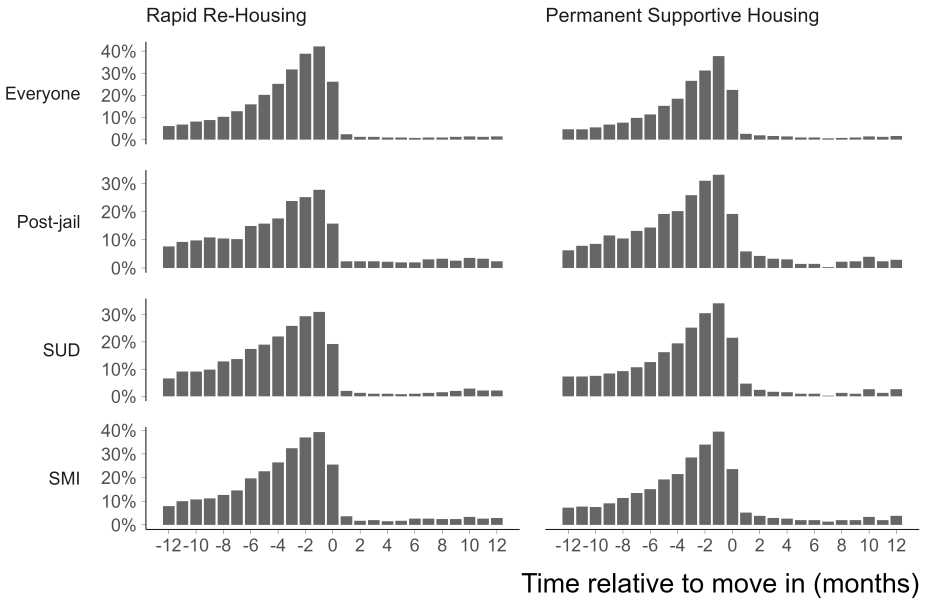

Figure 2: Monthly shelter use before and after move-in to subsidized housing, for all shelter users and three subgroups: people leaving jail, people with substance use disorders (SUD), and people with serious mental illness (SMI).

What's Wrong with the Current System

Federal rules for deciding who gets housing assistance rely on HUD's "chronic homelessness" designation. To qualify, someone must have been continuously homeless for at least a year, or have experienced repeated episodes over several years.

The problem is that this looks backward. It identifies people after they have already endured a long stretch without housing, so help arrives late, after much of the damage is done. Worse, because scarce housing slots go to people who have been homeless the longest, the system effectively rewards staying homeless: someone who finds a temporary solution, a friend's couch or a short-term arrangement, may lose their place in line.

What we need instead is a way to identify early who is likely to stay homeless for a long time, and get housing to them before that happens.

Getting Housing to the Right People

We draw on individuals' records across health, courts, employment, and housing assistance systems to identify, at the moment someone first enters shelter, who is likely to experience prolonged homelessness.

Among the people we identify at highest risk, more than 4 in 10 experience long-term

homelessness, compared to roughly 1 in 8 among all shelter entrants. HUD's chronic homelessness designation, by contrast, identifies high-risk individuals at nearly the same rate as if no screening were done at all.

Table 1 shows what happens as we widen the net and identify more people as being at risk. We care about two things: (1) of the people we identify at risk, how many actually go on to experience prolonged homelessness (precision)? Scarce resources should go to those who need them most. And (2) of everyone who will experience prolonged homelessness, how many do we identify (recall)? A program that prioritizes too narrowly misses people who need help. Even if a hypothetical program were large enough to reach every person expected to experience prolonged homelessness, our approach still places housing with people who genuinely need it at more than twice the rate of a program with no screening.

	Top 1%	**Top 5%**	**Top 10%**	**All**
Precision	41.1%	36.6%	31.3%	12.5%
Recall	3.3%	14.7%	25.1%	100%
AUC	—	—	—	0.70

Table 1: Identifying people at risk of prolonged homelessness.

Note: AUC captures how reliably the model ranks higher-risk people above lower-risk ones, from 0.5 (no ranking ability) to 1.0 (perfect); 0.70 reflects strong performance.

Reaching the right people means housing goes further. Directing assistance to the people we identify would prevent 2.4 times as many extended shelter stays per housing unit as the current approach, and over twice as many as under the federal chronic homelessness criteria.

Limitations

A few caveats are worth flagging. This analysis is based on one county in Pennsylvania, and while the approach is designed to be portable, local conditions vary. The gains from smarter allocation also don't substitute for more housing supply: they make each existing unit go further, but the unit still has to exist. And any time data-driven tools are used to allocate public resources, questions of fairness and transparency matter: who gets prioritized, and why, deserves ongoing scrutiny (Wilder and Welle, 2025).

The Bottom Line

Both the academic literature and inspection of the descriptive data show that deep housing subsidies largely end homelessness for people who receive it. Our data show just how easy

it is for assistance to reach the individuals who would have otherwise resolved. Using data driven targeting solutions, we can better target our resources to have a larger impact.

References

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