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LA thinks AI could help decide which homeless people get scarce housing — and which don't

Without enough houses for its growing homeless population, the city is using machine learning to make its process fairer.

by **Carly Stern**

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Drew Shannon for Vox

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Reba Stevens held her breath as she walked up the steps to the apartment, her then-6-month-old son perched on her hip. After 21 years of homelessness, she prayed: *God, please let it be a decent place for me and my baby to live.*

Stevens turned the key and walked through the gray front door into her first stable home since she was a teenager. She couldn't believe her eyes: a spacious living room, two large bedrooms, a beautiful bathroom, even a walk-in closet — thanks to a Los Angeles County housing voucher. She stepped back into the hallway. “I hit the floor and I cried,” said Stevens, recalling that day in the fall of 2000.

More than 20 years later, Stevens, a Black woman now in her 60s, has become an influential advocate for unhoused people in Los Angeles. She is working alongside other people who have been homeless, as well as frontline caseworkers, academics, data scientists, and city administrators, on a pilot project that aims to more accurately and equitably identify vulnerable people in need of housing assistance — with guidance from machine learning.

It's a project that is badly needed. Today, at least 75,000 people are unhoused in LA County, up from nearly 53,000 in 2018 — and the true number is likely much higher. For every available slot for permanent supportive housing in LA County, about four more are needed. That has left about 17,000 people waiting in line, while thousands in need of a home remain unconnected to the system that is supposed to provide them aid.

Across the US, the gap between the housing we have and the housing we need is estimated to be in the ballpark of 4 million units. In California alone, the shortfall is estimated to be roughly 840,000 units.

This leaves housing administrators grappling with the most vexing question in public policy: Who should we help first? The people most likely to recover quickly and gain

stability, or those in the most dire emergencies? As long as housing remains scarce, must we accept that one unhoused person's well-being can only be improved at the expense of another's?

The housing crisis has exposed flaws and racial biases in the old system, and it requires extraordinary solutions. Los Angeles is making a bet that machine learning can help solve that problem. But, at the same time, the increased application of machine learning and AI in public policy continues to raise concerns about unintended consequences — which, in the case of having housing or not, can make the difference between life and death.

Eric Rice, a social work professor who co-founded the University of Southern California's Center for AI in Society, a collaboration between USC social work professors and engineers that applies AI to tackle social problems, has helped lead a multi-phase project to create a more rational process for allocating housing to unhoused people. He and his team started with identifying the issues with LA County's old housing assessment process; Rice's research revealed that LA's process for evaluating people most in need of housing falsely scored Black and Latino clients as being less vulnerable than white clients. They then recruited community members to revise the assessment survey and the process for administering it, and worked with researchers who applied machine learning techniques to more empirically correct for potential biases in the results.

“This is the first project to do this in a major city with the complexity that LA has, the scope of homelessness that LA has, and also the concern about race equity,” Rice said.

Stevens joined a community advisory board that would set a new vision for how to identify the people truly most in need. They are part of a quiet, nationwide revolution in thinking about how to best help the people who need a home. In LA, Pittsburgh, and even rural Missouri, officials are asking the same question: Can new algorithms that predict a person's risk make a dent in America's homelessness crisis?

Homelessness, by the numbers

When Stevens was homeless, in the 1980s and '90s, there was little rhyme or reason to who got housing assistance and who didn't. Across the nation, the de facto models for homeless services either were first come, first served or functioned as lottery systems.

Over the years, housing officials struggled to make the system more rational. In 2012, the US Department of Housing and Urban Development (HUD) required states to set up “coordinated entry systems” to standardize how people were assessed and prioritized for services. Coordinated entry became the new “front door to the homeless services [system],” as Stevens puts it. “You can't get nothing without going through the front door.”

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A year later, a new screening survey called the VI-SPDAT was rolled out across the nation to impose more rigor on the process. The survey asked a few dozen questions meant to quantify — in a single number — a person's risk of severe outcomes like ending up in the emergency room, having a mental health crisis, becoming incarcerated, or dying on the streets. Answers to the survey questions produced a score out of 17, ranking a respondent's vulnerability.

The goal was to identify people in the most severe circumstances and get them help first, precisely in order to prevent those extreme outcomes from coming to pass. “HUD has found that when there are few incentives, people with the highest needs go unserved and often die on the street. This is a tragedy in this country,” said a HUD spokesperson.

The higher the survey score, the higher a person is ranked in the queue for permanent supportive housing, or apartments with on-site support services, like help with employment or mental health care. In theory, this approach — used not just in LA, but also in cities nationwide — was meant to deliver what scarce housing existed to those who needed it most.

But this system still isn't working functionally or fairly. Black people, who are less than 10 percent of the county's population, make up more than 30 percent of people without

a home in LA County. Decades of racist redlining, predatory mortgage lending, and the criminalization of poverty have combined with a housing shortage to create an epidemic of Black homelessness.

In 2018, LA County convened the Ad Hoc Committee on Black People Experiencing Homelessness to propose measures to address the root causes of the crisis. Stevens became a trusted voice on the committee. One key finding: The VI-SPDAT survey was broken. LA needed to fix the front door to its homeless services.

Rice's study found, through community advisory board meetings and case manager interviews, that a key problem was people often aren't told how this information will be used — so many clients are afraid to be honest.

Compared to white clients, Black clients were 6 percent more likely to get “false negatives,” or risk scores lower than more objective measures of their vulnerability. To make those estimates, Rice's team used county data on psychiatric holds, emergency room visits, jail, continued homelessness, and death, and then compared what actually happened to clients against their assessed vulnerability. Black clients were clearly more vulnerable than the survey detected; Latino clients were also 3 percent more likely than white clients to get false negatives.

Why would someone in need of housing be less than forthcoming? Survey questions can be convoluted and invasive, inquiring about substance use, sexual trauma, and domestic violence. “It's worded in a way that it can come across accusatory,” said Debra Jackson, a housing matcher for the homeless services nonprofit St. Joseph Center, who serves clients across Malibu, Beverly Hills, and Santa Monica.

Sometimes, caseworkers administered the VI-SPDAT when they'd only just met someone, or when a client was in a crisis state and couldn't think clearly. “Particularly Black people, who encounter law enforcement a lot more than someone else ... have this fear of the judicial system not working up on their behalf in a fair way,” Jackson said.

Debra Gatlin, another person enlisted to guide Rice's experiment, has leaned on her own experiences to help match the Los Angeles County mental health department's clients with permanent housing. She became unhoused for the first time in her life in

her 50s, after losing a job in the 2008 recession. She was shuffled from agency to agency, seeking referral after referral, like a game of hot potato. Nobody helped her.

“I am the person who helped me get housed,” she said. After finding a home without government assistance, Gatlin joined the mental health department staff in 2016. She’s seen its problems up close, as both client and administrator.

Before meeting with a client near the end of 2021, Gatlin checked the person’s file; he’d taken the VI-SPDAT survey at least twice before and gotten a low vulnerability score of 6 out of 17. (The county’s current threshold score to be prioritized for permanent supportive housing is 8.)

They began the evaluation, with Gatlin paying close attention to his facial expressions and body language. She tried to make him feel comfortable.

“None of this is meant to get you in trouble. This is to help you,” she reassured the man.

When Gatlin asked about military service, her client said yes. He had not disclosed this in prior surveys, but with her, he opened up and shared other details about his history he’d not previously revealed. His vulnerability score nearly tripled to 16 out of 17.

Several housing options were now available to him. He chose to move into a place near Brentwood, a neighborhood on LA’s Westside.

During the monthly meetings of the LA pilot project’s community advisory board, Gatlin shared her experiences seeing a client’s fate hinge on how the survey was administered. She joined Stevens, Jackson, and more than a dozen others every few months for nearly two years to map out how to overhaul the housing triage process.

Board members stressed the importance of timing; caseworkers should never undertake the survey when meeting someone for the first time or when someone was actively in crisis without organized thinking. Jackson watched people struggle to correlate their histories of trauma with their current situation.

“They can’t make that connection,” she said. “You see that pattern over and over again.”

Why the old system failed

The community advisory board recruited by Rice and his colleagues in 2020 first sought to identify problems with the old survey, propose best practices for administration, and refine the language to be more sensitive to people's trauma.

That was the relatively straightforward part. The members next had to decide how the new triage process would assess vulnerability — a dilemma with no clear answers. Should they prioritize housing assistance for the highest-need people who face the most significant risk of adverse events like emergency room visits, incarceration, and death? Or should they prioritize the people most likely to quickly exit homelessness for good, those who might need less support for less time than others to achieve stability?

“It's like the sinking ship law that comes into place. You have a lot of people who are drowning. Who are you going to save first?” said [Sam Tsemberis](#), an associate clinical professor in psychiatry and behavioral sciences at the University of California, Los Angeles, who created the [Housing First](#) model that prioritizes housing for at-risk people before contending with other issues. “It's an impossibly difficult decision we shouldn't even be having to make. It's like ranking levels of misery and poverty and desperation.”

Building more housing would, of course, make this less of a zero-sum exercise. But [parochial political feuds](#) and byzantine zoning codes [have hampered LA's efforts](#) to get more new housing off the ground. Until enough new housing is built, someone has to figure out who gets the accommodations that currently exist — and who doesn't.

Stevens grappled with these questions from the perspective of someone who had needed help long before it came.

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At age 19, she had been a caregiver for a family friend while raising her toddler and attending college. But when that friend passed away, the woman's extended family kicked Stevens out of the house.

Stevens had no savings. She left her child in her mother's care while attending classes and couch-surfed for as long as she could. Sometimes she rode the bus all night, hiding in the back. One driver used to silently pass her a doughnut and coffee at daybreak. Stevens had never used alcohol or drugs while she had housing, but she started using. "I was embarrassed, I was ashamed," she said. She dropped out of college later that year.

Each year she went without a home, Stevens's situation continued to deteriorate. She spent time in jail and experienced domestic violence. She found an affordable apartment, but relapsed and lost it. When she found housing again, in 1986, she had a new job, but fell behind on rent and eventually was evicted.

It was not until the summer of 2000 that Stevens's name was called for a subsidized housing voucher. She was celebrating two years of sobriety, almost to the exact day, and making strides in therapy. "I believe that it was an act of providence," she said.

Despite her gratitude for this breakthrough, Stevens believes the system should intervene before people's lives fully unravel. The VI-SPDAT wasn't in place when she was unhoused, but her vulnerability score at age 19 would have been much lower than at 40, after all she'd been through. Had she received help much earlier — even though her score likely would have been lower — she might have been able to prevent two decades of suffering.

"The truth of the matter is that everybody is vulnerable," Stevens said. But under the current approach, "you got to be broke down and shattered for me to help you."

"You've got a better chance with somebody who just fell because they lost their job. Those people should be prioritized, too, because they can get up. They already got boots, they just got a broken strap. Help them fix the strap."

But this would mean people on the verge of crisis would be less likely to get resources. "Some chunk of those people are going to continue to experience homelessness, and they're going to continue to do badly, and they will eventually be the people that are being prioritized," Rice said.

He emphasized that the longer people are homeless, the more likely they are to experience adverse events. Without help, the people today who are deemed not vulnerable enough to warrant aid will eventually become the most downtrodden — but only after years of difficulty, suffering, and diminished health.

“Without enough resources, we can't ... put to the front of the emergency room the people who've got a sprained ankle when we've got people who have arterial bleeds,” Rice said. “The thought process, for better or for worse, is that people with sprained ankles just have to wait.

“In this context, the people with sprained ankles will eventually have arterial bleeds.”

How machine learning could help

To Stevens, based on her experiences, it was clear they should bandage the sprains. But HUD had a federal mandate in place that coordinated entry systems must prioritize people with more severe needs and vulnerability for assistance first. (A representative from HUD couldn't confirm whether local agencies would lose funding if they didn't comply.)

The other board members, while sympathetic to Stevens's argument, concluded they were bound by this mandate. LA County's revised triage process would focus on the highest-need people.

The next phase of the project would involve using data science to reduce some of the biases, both human and systemic, exposed in the old triage process.

The previous triage tool had relied solely on self-reported information from the survey to produce a vulnerability score. Now, Rice's colleagues would build a more complex predictive risk model. They evaluated historical data from the last five years to identify which survey questions were actually correlated to adverse events and which were not. They used criminal, hospital, and death records, as well as data collected through housing authorities.

The mission to produce the new risk model was assigned to Brian Blackwell, a senior data scientist for California Policy Lab, a research group affiliated with the Universities of California.

His goal was to slim the survey down to only include questions with a statistical correlation to the outcomes that Rice's team cared about. That way, the team could cut extraneous questions that obscured a client's true vulnerability and could be traumatizing for a client to talk through unnecessarily.

But a better survey alone wouldn't eliminate all the preexisting biases that prevented people in need from being identified, particularly racial biases. Blackwell wanted the predictive risk model to correct for the old tool's error rate for clients of color. "That's someone who perhaps could have benefited from permanent housing or a housing subsidy," he explained, "but the tool didn't recognize that.

"All predictive models make errors — that's inevitable — but what you want to make sure is that those errors don't systematically discriminate against certain groups," Blackwell added.

Blackwell's team sought to ensure the new model would no longer have a statistical difference in accuracy by race. They opted for a simple algorithm that would allow housing officials to continue administering the survey to clients in the field. The machine's decision-making would also be transparent. The model — known as "ordinary least squares linear regression" — estimates the relationship between different variables to make forecasts. (Some liken it to the way a GPS navigates through data to find the best route to a destination.)

The new tool now rests in the hands of the Los Angeles Homeless Services Authority (LAHSA). Marina Flores, LAHSA's director of systems and planning, said the agency will start training workers on the new process in December. LAHSA plans to implement and start using the tool for permanent supportive housing prioritization by January 2025.

Caseworkers will still administer the new VI-SPDAT with a pen and paper, but will input each answer on a computer. The new model assigns different point values to

different questions, with more weight given to questions that are most closely associated with negative outcomes. The system will spit out a single number summarizing a person's vulnerability, as before, but the adjusted scoring system should correct for previous racial biases.

Flores said the new process is needed to rebuild trust with the case workers who saw how flawed the old system was. She's glad LAHSA's new model will cut extraneous questions — such as “do you have planned activities, other than just surviving, that make you feel happy and fulfilled?” — and will only include ones with a demonstrated correlation to adverse outcomes.

“We're able to use something that actually has some validity to do it,” she said.

The new risk prediction model will tell case workers like Gatlin about who needs housing most urgently. But the caseworkers will still have discretion about which housing resources should be allocated to the people identified as most vulnerable — at least for now.

Phebe Vayanos, a USC engineering professor who co-directs its Center for AI in Society with Rice, had built a housing allocation algorithm that would match clients with specific housing as part of the project. But LA officials have opted to hold off on implementing it.

Flores knows integrating AI into a process that alters the fate of so many could be controversial, given public skepticism about the technology. Experts routinely warn that models are only as fair as the datasets they train on and that machine learning could amplify existing racial biases. Skeptics caution against removing too much human judgment from subjective, life-or-death decisions. LA officials wanted to be cautious and test the waters.

Already, the same concepts motivating LA's project are being scaled elsewhere. In 2023, a team based in rural Missouri launched a similar project to overhaul their triage process and fix their own “front door” by adopting many principles from Rice's pilot.

“When people are talking about machine learning ... some people may hold a view in terms of, ‘Oh, it's frightening, it's biased,’” said Hsun-Ta Hsu, who studied under Rice

before joining the University of Missouri's School of Social Work from 2015 to 2022. Hsu is helping lead the Missouri project.

"It's probably likely so. But there's a way to address those [biases]," Hsu said. "Our community stakeholders, the most vulnerable population who are likely to be directly impacted by the consequences of the tool ... they help us to define what the prioritization should look like."

"A huge leap in the right direction"

Even some of those closest to the project are critical and harbor doubts. At times, they question whether they're fighting the right battle. While those like Gatlin feel it's worthwhile to fix the front door, others like Stevens don't want people to lose sight of the fact that the house is still broken.

Stevens is not convinced these changes to LA's coordinated entry system will make a dent. "This thing has just gotten too far out of hand for any kind of tool to be a right tool," Stevens said. "We can't say, 'Housing is a human right,' and then be saying, 'Oh, but you gotta score [a] 15.'"

"It's urgent," she said. Yet the message "is still hold on and wait."

Rice is learning to live in the gray area. "What I've done is helped to work on making a system that is inadequate to deal with the scope of the problem fair, or more fair, but not necessarily ... [solved] a larger, more fundamental problem of inadequate housing resources in our country," he said.

"That is a more profound problem," he said, one that requires "a shift in our thinking as Americans about the value of taking care of citizens who fall through the cracks."

In the meantime, he believes in the value of incremental progress. "Until our country has the political will to address homelessness ... with a greater emphasis on creating more housing, we need to make sure that the existing system that is being funded — that is in existence — is fair," he said.

Jackson takes a pragmatic view: She sees the project as a crucial first step. “If it rolls out the way that we hope, then it will be a huge leap in the right direction for helping to identify vulnerability, and getting the most information you can in the least harmful aspect,” she said. “The goal is to move someone from unhoused to housed with the least amount of trauma.”

Gatlin, for her part, feels hopeful that changing the triage process will be consequential. She’s seen how much this single interaction can make or break an unhoused person’s fate. “This is your life that we’re dealing with,” she said. Each life saved makes a difference.

To finally have a seat at the table — to feel her own agency in shaping LA’s course on an issue that had so deeply affected her — felt “exhilarating.”

“I’ve been out here advocating for homeless populations and homelessness for a long time,” Gatlin said. “I really felt like my voice is being heard.”

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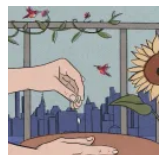
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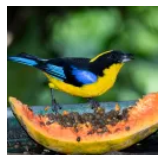


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