Can AI Reduce Race Bias in Homelessness?

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New Algorithm Can Improve Outcomes in Assigning Housing to Homeless Youth and Change Housing Policy

HOMELESS IN DOWNTOWN LOS ANGELES

It is estimated that each year, in the United States alone, four million youth experience homelessness. There is not enough public housing to support these youth. African-American and Latino youth make up a disproportionate percentage of the homeless youth population: African American youth are 13 percent of the US population and yet represent twenty-four percent of homeless youth; Latino youth represent 15 percent of the U.S. population yet are 20% of the homeless youth population.

While communities allocate public housing resources fairly across race and ethnicity, African-American and Latino youth are not succeeding at the same rate in exiting homelessness. Of the 20% of youth who return to the streets within a year, they are disproportionately Black and Latino. How can we insure that the most youth succeed in exiting homelessness? It's a question that artificial intelligence can help answer. Researchers at the USC Center for AI in Society, a joint venture between the USC Viterbi School of Engineering and the USC Suzanne Dworak-

Peck School of Social Work, have developed an algorithm that could increase the proportion of youth that successfully exit homelessness by over 16 percent while simultaneously reducing racial disparities by 72 percent.

Current Housing Practices:

In the current state of affairs, social workers prioritize individuals that experience homelessness using a "vulnerability" score that is calculated using six key experiences that increase an individual's risk of becoming chronically homeless. This score is used to match individuals to the appropriate public housing opportunities. The most common public housing interventions are rapid-rehousing (a three-month voucher that covers rent to help support an individual temporarily) and permanent supportive housing (long-term, supportive housing to support individuals with disabilities). According to the current policy, individuals who are deemed to be the most vulnerable are offered permanent supportive housing, those who are least vulnerable are not given any public housing, while those in between are offered rapid-rehousing.

Evaluating the Current Policy:

"What is attractive about the current policy is that it is intuitive and easy to explain: it provides the most supportive resources to the most vulnerable youth. On the other hand, this policy is not tied to outcomes: it does not take into account the effectiveness of particular types of housing resources to assist individuals and individual needs," says the study's corresponding author Phebe Vayanos, Associate Director of the CAIS Center for Artificial Intelligence in Society and Assistant Professor of Industrial & Systems Engineering and Computer Science at USC.

To date, little research has been conducted to help evaluate if the current policies and prioritization tools are successfully mitigating chronic homelessness and racial or other disparities in homelessness.

USC researchers Mohammad Javad Azizi, Phebe Vayanos, Bryan Wilder, Eric Rice, and Milind Tambe analyzed a dataset from the Homeless Management Information System of approximately 11,000 homeless youth cases to evaluate outcomes of housing interventions and to determine how to help policymakers use existing resources more efficiently and more fairly.

The researchers found that more than 90% of youth who receive permanent supportive housing remain housed for at least 12 months, and more than 80% of youth who receive Rapid Rehousing vouchers remain housed that long.

However, their study has some startling findings: the current policy is less efficient than random allocation — in other words, if housing resources to homeless youth had been assigned by a lottery system, a greater proportion of youth would have exited homelessness successfully (stayed off the streets for 12 months or longer).

In addition, the study shows that current policies, which are perceived to prioritize vulnerable individuals, actually result in unfair outcomes for Black and Latino youth: a White youth experiencing homelessness is about 1.5 times more likely to successfully exit homelessness (be off street for 12 months or more) and not return to the streets compared to his/her Black counterpart and about 1.4 times as likely to exit homelessness as his/her Latino counterpart.

“While the current policy does not explicitly treat youth of different races differently, it implicitly results in disparate outcomes. This is a clear sign that something must be actively done to prevent disparities,” says Vayanos.

Results of New Method: Eliminating 72% of Race Disparity while Improving Efficiency for all by 16%.

Motivated from the results of their analysis, the researchers with expertise in computer science and social work designed a new artificial intelligence tool to help policymakers develop policies that meet their community needs and reduce bias in housing allocation for homeless youth. The algorithm does not incorporate additional housing resources. Instead, it leverages historical data to allocate the same housing resources in a more strategic fashion so as to maximize efficiency of the allocation while mitigating biases.