

Incorporating social determinants of health: Simplest solution may give the best results

October 7 2021



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Healthcare only accounts for a small percentage of a person's overall wellbeing and health, but external factors such as socioeconomic status and access to food are difficult to capture and leverage within the healthcare system. Machine learning models may help bridge that gap. Research from Regenstrief Institute and Indiana University Richard M.

Fairbanks School of Public Health shows that using the most basic raw data created the best risk prediction models for primary care doctors to identify patients who may need some help.

"There is so much data available on social determinants of [health](#), but the challenge is turning it into something [healthcare providers](#) can use," said project leader Joshua R. Vest, Ph.D., MPH, Regenstrief research scientist and IU Fairbanks School of Public Health professor. "Results from our analysis suggest the simplest approach to creating a [prediction model](#) may be the most effective."

The research team compared the performance of six area-level social determinants of health measurement approaches to create an algorithm predicting patient referral to a [social worker](#) and hospital admission after a primary care visit. They tested the algorithms on data from nearly 210,000 patient encounters within Eskenazi Health, a safety net healthcare system in Indianapolis, Indiana.

They found the model that used several individual area-level components, such as raw data on housing, income and education, created the most accurate prediction model. Other models combined housing and other components to create a single bigger picture measure, which is more complicated and was less accurate in identifying individuals who may be at risk.

"This study indicates that using the raw data is a viable solution to creating a referral model," said Dr. Vest. "There may be a need to develop more complex models in the future, but this can be a strong starting point for health systems to begin leveraging social determinants of health, especially systems that may have fewer resources."

The next steps to this research are to determine if this approach works for situations other than social work referrals and hospitalization

prediction and to look at additional data that can be added to this algorithm.

"Choice of measurement approach for area-level social determinants of health and risk prediction model performance" is published online in *Informatics for Health and Social Care*.

More information: J.R. Vest et al, Choice of measurement approach for area-level social determinants of health and risk prediction model performance, *Informatics for Health and Social Care* (2021). [DOI: 10.1080/17538157.2021.1929999](https://doi.org/10.1080/17538157.2021.1929999)

Provided by Regenstrief Institute

Citation: Incorporating social determinants of health: Simplest solution may give the best results (2021, October 7) retrieved 5 May 2024 from <https://medicalxpress.com/news/2021-10-incorporating-social-health-simplest-solution.html>

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