

# AI can predict who will fall off the health bandwagon and help them back on

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Credit: Farhad Ibrah on Unsplash

A new study from CSIRO, Australia's national science agency, has shown the potential benefits of using an AI algorithm to improve engagement and health outcomes from digital health programs.

The study, published in the *Journal of Medical Internet Research*, used a CSIRO developed algorithm that uses AI to predict when a person will

drop out of an online weight loss program.

With 67% of Australian adults overweight or obese, 8% of the burden of disease in Australians due to obesity and about 5% due to dietary risks, supporting that [health intervention](#) and lifestyle change is more important than ever.

Recently, there has been an increase in digital behavioral [intervention](#) programs to help reduce modifiable health risk factors such as obesity and lack of exercise.

Engagement in these programs is critical to interventions that achieve successful behavior change and improvements in health.

The study of over 59,000 participants from CSIRO's Total Wellbeing Diet is a world-first in analyzing data from a large, online, commercial weight loss program.

It found by using [machine learning](#), scientists can accurately predict from week three when a user is going to disengage from an online program.

Machine learning is a method of "teaching" a computer to recognize patterns by training it on data containing examples.

Dr. Aida Brankovic, research scientist with CSIRO's Australian e-Health Research Center and lead author on the paper, said there is currently little evidence for how people engage with these programs, especially in terms of when and why they quit.

"Despite the growing application and adoption of technology in health interventions, one persistent challenge remains—[engagement](#) deterioration or non-usage attrition," Brankovic said.

"The successful machine learning model used in the study predicted disengagement from the program on a weekly basis, based on the user's total activity on the platform, including weight entries from the weeks prior.

"With this information, digital health interventions can become more tailored, supportive and offer users a greater chance of making long-term lifestyle changes.

"Importantly, the [machine learning model](#) used in this study can also be adjusted and applied to large cohorts of data in other online programs requiring engagement."

CSIRO research scientist and co-author of the paper, Dr. Gilly Hendrie, said effective engagement in a digital health program is vital to success and yet also challenged by the fact that it is open to the user's discretion.

"It is hoped that the findings of this study and future work focused on other factors of engagement with digital health programs will lead to improved experience for users, including tailored content at critical time points," Hendrie said.

**More information:** Aida Brankovic et al, Predicting Disengagement to Better Support Outcomes in a Web-Based Weight Loss Program Using Machine Learning Models: Cross-Sectional Study, *Journal of Medical Internet Research* (2023). [DOI: 10.2196/43633](https://doi.org/10.2196/43633)

Provided by CSIRO

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