



# The Opioid-Abuse Predictor

Names  
Institute



## Background and Introduction

The opioid epidemic has had severe consequences on public health, leading to hundreds of American deaths daily and burdening the health care system. Identifying those at risk of opioid aberrant drug-related behavior (ADRB) is crucial. However, traditional tools like the Opioid Risk Tool (ORT) are limited by self-reported measures. Alternatively, machine-learning algorithms, particularly recurrent neural networks (RNNs), offer a new approach to analyzing this data. RNNs can effectively consider temporal variations in medications, conditions, and other factors. Implementing an RNN-based machine learning model would significantly improve the identification of individuals at risk of opioid abuse.

## Methods

Through SQL queries, we obtained patient time-series data on conditions and medications from Research All of Us. Selecting specific conceptual features from Burek et al. and other reputable sources, we constructed a feature matrix of patient-visit information. Subsequently, we trained an LSTM RNN model using our chosen features.

## Objectives

The Opioid-Abuse Predictor aims to enhance clinical decision-making by identifying individuals at risk of opioid abuse, improving patient safety during opioid prescriptions. The Opioid-Abuse Predictor mobilizes Research All of Us EHR data and employs advanced technologies like LSTM RNNs and factor analysis to explore temporal dependencies among medication, procedures, lab results, and diagnosis histories. The predictor serves as a modern, user-friendly foundation for future research endeavors, aiming to provide more precise predictions of opioid abuse.

## Results

What did you find?

What did you learn?

You may want to present any relevant charts or graphs here if applicable.

## Future Directions

Future researchers are encouraged to explore genetic variables that contribute to the determination of a person's susceptibility to abusing opioids. By investigating the genetic aspects, a more comprehensive understanding of the underlying factors influencing opioid abuse can be attained. Moreover, it is essential for researchers to incorporate more sophisticated and technical approaches in selecting their factors for analysis. Emphasizing a critical evaluation of these factors can lead to more confident conclusions.

## References

Include citations for any referenced work

## Acknowledgements

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