

# Effects of Social Determinants of Health on Health Outcomes Among Patients with Major Depressive Disorder (MDD)



Gutlay C<sup>1</sup>, Saber J<sup>2</sup>, Kennedy L<sup>2</sup>, Irwin K<sup>2</sup>, Lee E<sup>2</sup>

<sup>1</sup>University of California Irvine, Irvine, CA, USA, <sup>2</sup>Innopiphany LLC, Irvine, CA, USA

Contact: junko.saber@Innopiphany.com

Poster  
HPR69

## Can Neighborhood Affect Whether A Depressed Person Is Willing To Seek Treatment?

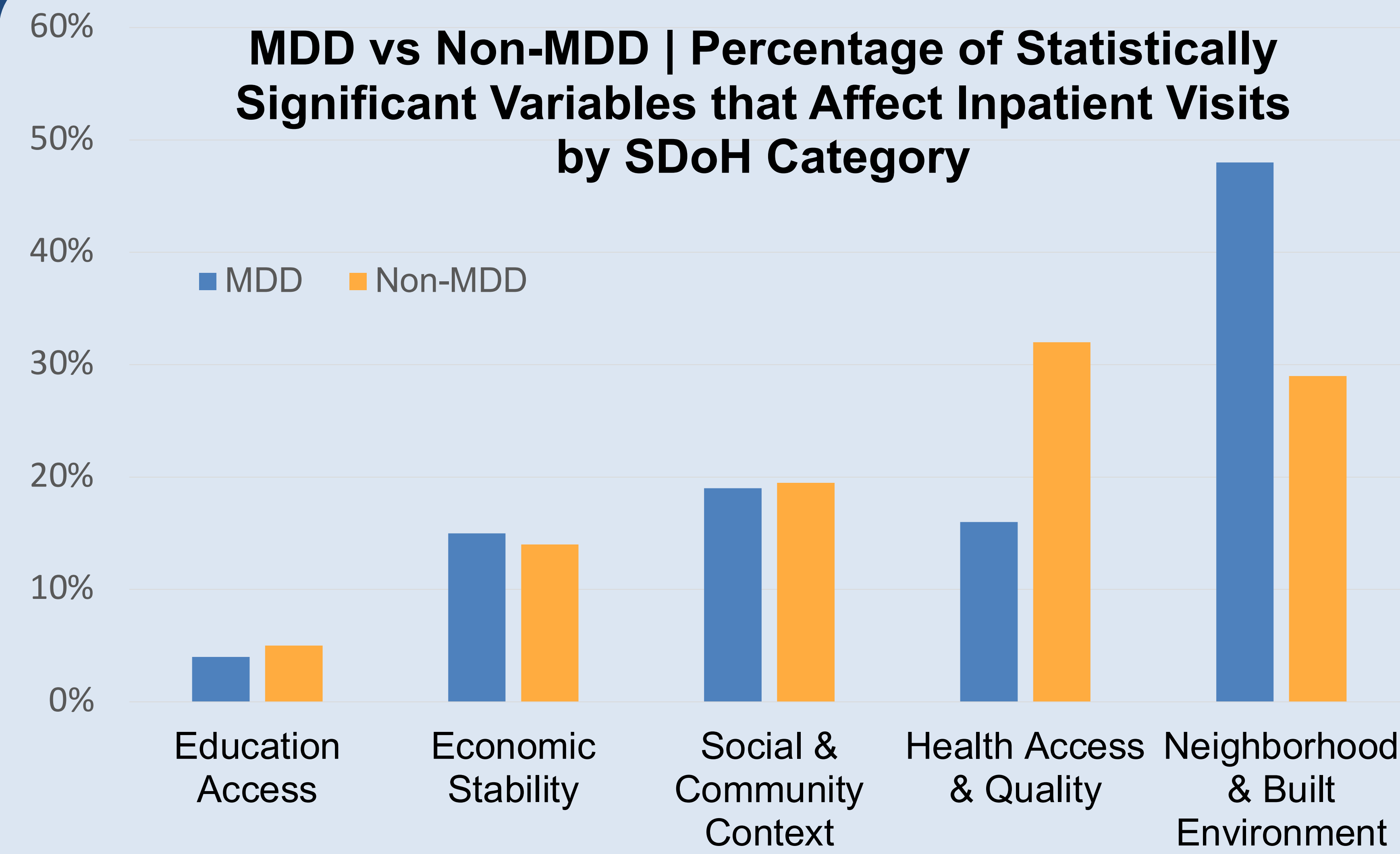
### Overview

- **Background:** Social determinants of health (SDoH) are the non-medical attributes of a person's environment that impact their health, functioning, and quality of life [1] addressing differences allows for policies that increase opportunities for health equity.
- **The US National Institutes of Health's All of Us (AoU) database [2]:** Focuses on diversity and inclusion in its participants to give more representative data. At the time of analysis, AoU contained over 372,000 US patients and four types of records: surveys, electronic health records, whole genome sequencing, and Fitbit data.
- **Objectives:** Using the AoU database, the objectives for this project were to **1) infer** which categories of SDoH had the greater impact on Inpatient Visits and **2) infer** which survey questions were more correlated with General Quality\*\* among MDD cohort vs. the Non-MDD cohort.

### Methodology

- **The variables used for this process were comprised of demographic, socioeconomic, survey, and electronic health record data** supplied by the All of Us database.
- Constructed SDoH categories from AoU survey questions, informed by the CDC definitions of SDoH.
- **[Objective 1]** Forward stepwise linear regression and principal component analysis was used to examine the impact of SDoH categories on inpatients visits.
- **[Objective 2]** Lasso regression was used to identify the individual survey questions or features that are influential to General Health\* and General Quality\*\* outcomes.

### Result



- Neighborhood and Health Access categories are the greatest sources of difference between MDD and Non-MDD cohorts that explain inpatient visits.
- 48% of Neighborhood-associated variables in the MDD cohort are statistically significant in explaining Inpatient Visits vs 29% for Non-MDD cohort.

### MDD and Non-MDD | Differences in Feature Impact on General Quality\*\*

Feature	MDD Cohort	Non-MDD Cohort
Assessment of Emotional Problem Over 7 Days	-0.173	-0.118
Assessment of Average Fatigue Over 7 Days	-0.182	0.155
Assessment of Companionship: How often do you feel lack of companionship?	-0.055	-0.031

- Analysis found that survey questions related to Emotion, Fatigue, and Companionship had the greatest correlation to General Quality\*\* among the MDD cohort.

### Discussion & Conclusions

**Discussion:** MDD patients may be withdrawn and feel isolated, thus unwilling to seek medical attention and health resources of their own initiative. With a strong relationship to neighborhood, it is possible that the demographic/geographic factors may be of interest, such as proximity to hospitals, doctor's offices, and other healthcare institutions.

**Conclusion:** Inpatient visits see a strong link to the Neighborhood-related SDoH variables, particularly for the MDD population. Health Access & Quality has significantly more influence on the Non-MDD population, indicating that MDD may adversely affect patients' willingness to seek care. Additionally, MDD patients' General Quality\*\* scores were most affected by questions about negative emotional stimulus, fatigue, and the presence of supportive relationships. **Next Steps:** Continued studies on the aspects of Neighborhood that affect inpatient visits and elements of diminished quality of life could be useful in a primary care setting to increase health equity.

Acronyms Used: Social determinants of health = SDoH, All of Us = AoU, QoL = Quality of Life, MDD = Major Depressive Disorder

\*General Health refers to survey question PPI1585711 and \*General Quality refers to survey question PPI1585717, both are from the Overall Health Survey of the All of Us Research Program which ask about participant's general health & general QoL.