# Digital CBT Engagement Predicts Reductions in Anxiety and Depression

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## Disclosure

The authors are employees and equity holders of NeuroFlow, Inc., a behavioral healthcare technology company that sponsored the research being presented here.

BACKGROUND

# Anxiety and depression are public health crises

**1 in 3** affected[1]

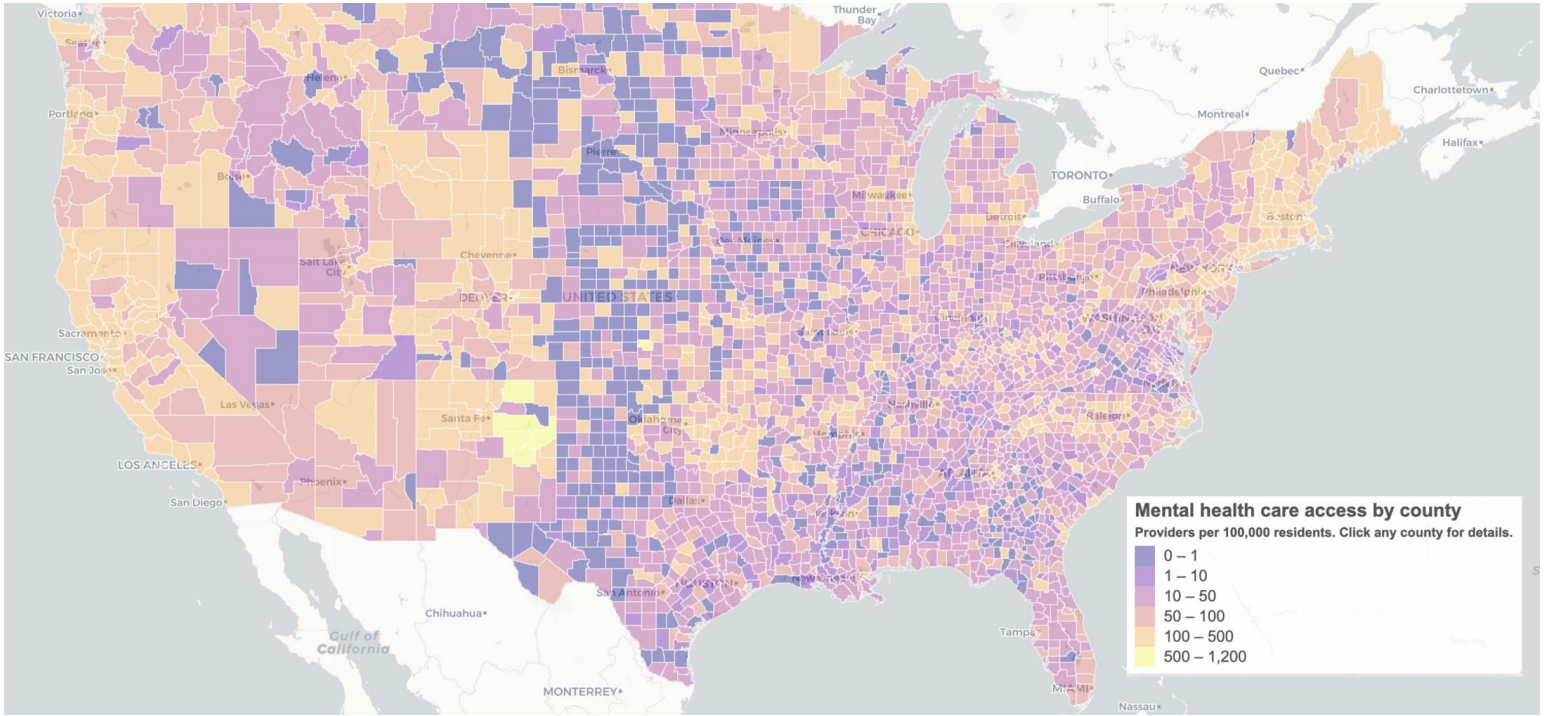
**comorbid** with a range of medical and BH issues[2]

**multibillion-dollar** burdens on U.S. health economy[3]

1. Vos et al., 2017. *Global Burden of Disease Study*; 2. ter Meulen et al., 2021. *Depression and Anxiety Disorders in Concert*.;
3. Beddington, 2008. *The Mental Wealth of Nations*.

## BACKGROUND

# Despite this, mental health resources are scarce in the U.S.



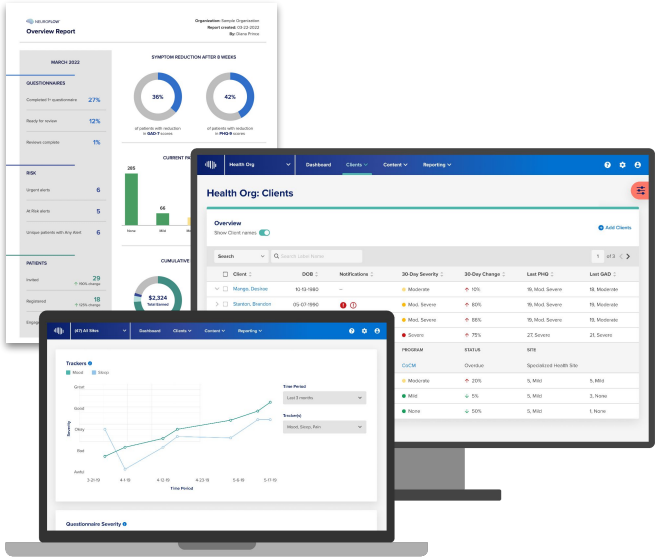

Livingston & Green, 2022: *America's Mental Health Care Deserts: Where is it Hard to Access Care?* ABC News [CMMS data]

## IT SEEMS THAT TECHNOLOGY CAN IMPROVE THIS SITUATION…

# Digital BH platforms allow location-agnostic dCBT deployment


tailored dCBT content & remote measurement

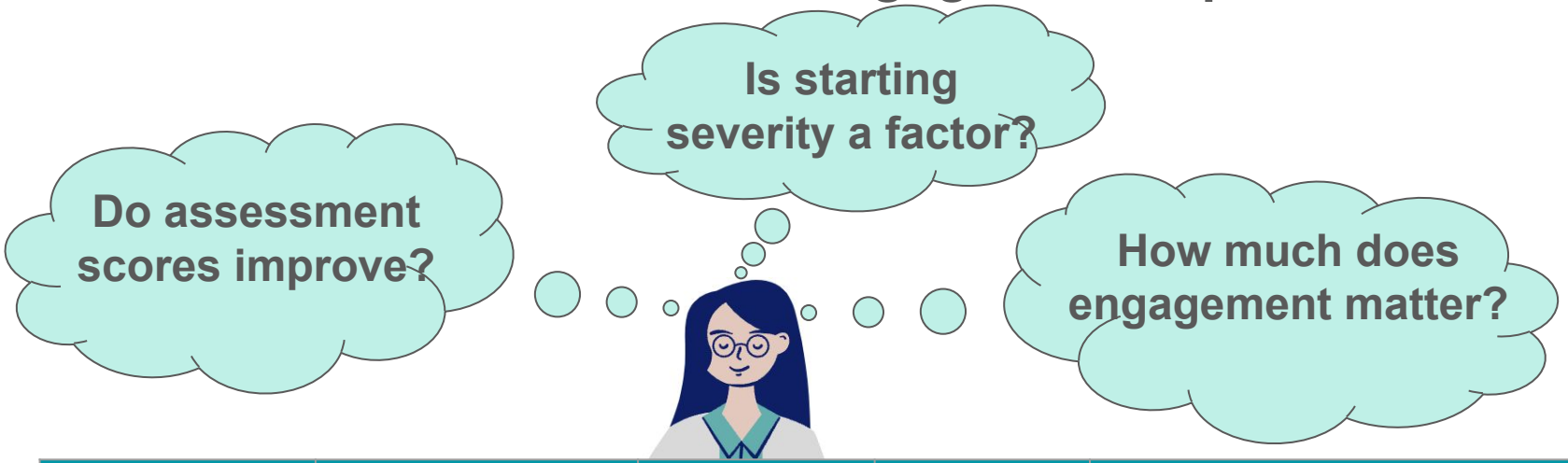
**mutually improved outcomes**




data-rich provider features enabling individualized care

## ...BUT TO BE SURE, WE NEED MORE RESEARCH!

# We studied links between dCBT engagement & patient outcomes




| Pre-study assessment | Cohort assignment | dCBT program | Evaluation period | Outcome measures |
|---|---|---|---|---|
| GAD-7 | Anxiety: 142 | *FearFighter* | 180 days | 1. Pre-post score changes<br>2. Completion percentages<br>3. Changes relative to severity |
| PHQ-9 | Depression: 104 | *MoodCalmer* | | |

Holley, Brooks, et al., 2024 (in press): *Digital CBT Interventions Predict Robust Improvements in Anxious and Depressive Symptomatology*

FINDINGS

# A snapshot of our three biggest takeaways

both cohorts significantly improved pre/post
(p's < .001, *d* = 0.46, 0.45)

completion% significantly predicted improved outcomes in the anxiety cohort
(t = 3.59, p < .001)

in the anxiety cohort, starting severity predicted large improvements
(F = 9.88, p < .001)

## Available with open access in the coming weeks

Holley & Brooks et al., (2024) [in press]. Digital CBT interventions predict robust improvements in anxious and depressive symptomatology: A retrospective database study. *Innovations in Digital Health, Diagnostics, and Biomarkers*.

DETAILED FINDINGS

# Symptom severity in both groups significantly improved

| Cohort | Assessment | Pre | Post | Stats |
|---|---|---|---|---|
| Anxiety | GAD-7 | 12.15 | 9.98 | $t = 4.65$, Cohen's $d = 0.46$, $p < .001$ |
| Depression | PHQ-9 | 10.5 | 8.74 | $t = 5.22$, Cohen's $d = 0.45$, $p < .001$ |

# The most engaged patients saw the greatest benefits

| Cohort | Completion | N | Pre | Post | Between-groups comparison |
|---|---|---|---|---|---|
| Anxiety | ≥75% | | 12.15 | 9.98 | $t = 4.65$, Cohen's $d = 0.46$, $p < .001$ |
| | <75% | | | | |
| Depression | ≥75% | | 10.5 | 8.74 | |
| | <75% | | | | |

# RESERVE SLIDES