Engaging Patients in Pharmacotherapy for Alcohol Use Disorder with Technology

John Mendelson MD, David Deacon PhD, Sam Xu BA, Robert Nix PhD

Ria Health, San Francisco, CA

Abstract

Aim: Treatments for AUD suffer from high attrition rates, limiting the impact of otherwise efficacious therapeutics. Here we report how combining technology and treatment can increase persistence in treatment, which in turn, improves clinical outcomes.

Background: Only 14.2% of patients treated for AUD with oral naltrexone remain in treatment at six months (Kranzler Nov 2008 Addiction). The Ria Health platform is a telemedicine program for treatment of AUD. Patients use a dedicated HIPPA-compliant app to access Ria physicians, obtain medications to curb alcohol use (naltrexone and others), and receive support from recovery coaches. As part of the program patients track their breath alcohol concentrations with daily breathalyzer assessments linked to the Ria app on their smartphones.

Methods: This study reports engagement behavior collected daily from all Ria patients through January 7, 2019. Behaviors indicating engagement include remaining enrolled in the program (patients pay a monthly subscription fee), daily breathalyzer use, medication adherence confirmations, secure text messages, patient care team telehealth visits and prescriptions issued to patients.

Results: Over this time period Ria enrolled 635 patients. At the 180 day point 50% remained enrolled and engaged. Patients contributed 140,415 engagement data points. There were 66,639 breathalyzer readings, 16,315 medication adherence confirmations, 9,593 care team visits through telehealth, 23,364 in-app text messages, 3,244 payments and 2,665 prescriptions issued. Medication adherence at 180 and 360 days was 71.6 and 79.6%.

Conclusions: Compared to published results patients using the Ria Health platform remain in treatment longer and use medications more frequently than existing medication management programs. The ~3.5X improvement in treatment engagement translates to better outcomes. Use of purpose designed technology platforms can improve treatment retention and allow optimization of behaviors that improve engagement.

Supported by Ria Health.

Introduction

The Ria Health platform is a telemedicine program and smartphone app to help people with AUD decrease their alcohol consumption.

Patients use a dedicated HIPPA-compliant app to access Ria physicians, obtain medication to curb alcohol use (naltrexone and others), and receive support from recovery coaches.

Medications combined with psychosocial treatments are effective in AUD but remain underused.

- Oral and IM Naltrexone is efficacious for treatment of AUD, with a modest effect size, but use remains limited (reviews and meta-analyses: Bouza 2004, Kranzler 2001, Pettinati 2006, Roozen 2006, Rösner 2010, Srisurapanont 2005, Streeton 2001).
- For oral naltrexone medication nonadherence contributes to the reduced observed effect sizes. (Chick 2000, Krystal 2001, Pettinati 2000).
- Analyses of prescription databases confirms low levels of persistence on oral naltrexone treatment, with the majority of patients discontinuing medication by 1 month (Harris 2004, McCarty 2009) with more than 75% discontinuing by 6 months (Baser 2011; Hermos 2004; Kranzler 2008).

RCTs with technology platforms that promote engagement demonstrate improved adherence (Patel 2019, Coyle 201

Results

635 patients contributed 140,415 engagement data points.

There were:
66,639 breathalyzer readings,
16,315 medication adherence confirmations,
9,593 care team visits through telehealth,
23,364 in-app text messages,
3,244 payments and
2,665 prescriptions issued.

Medication adherence at 180 and 360 days was 71.6 and 79.6%.

Mean BAC decreased from .09 at baseline to .03 at 6 months.
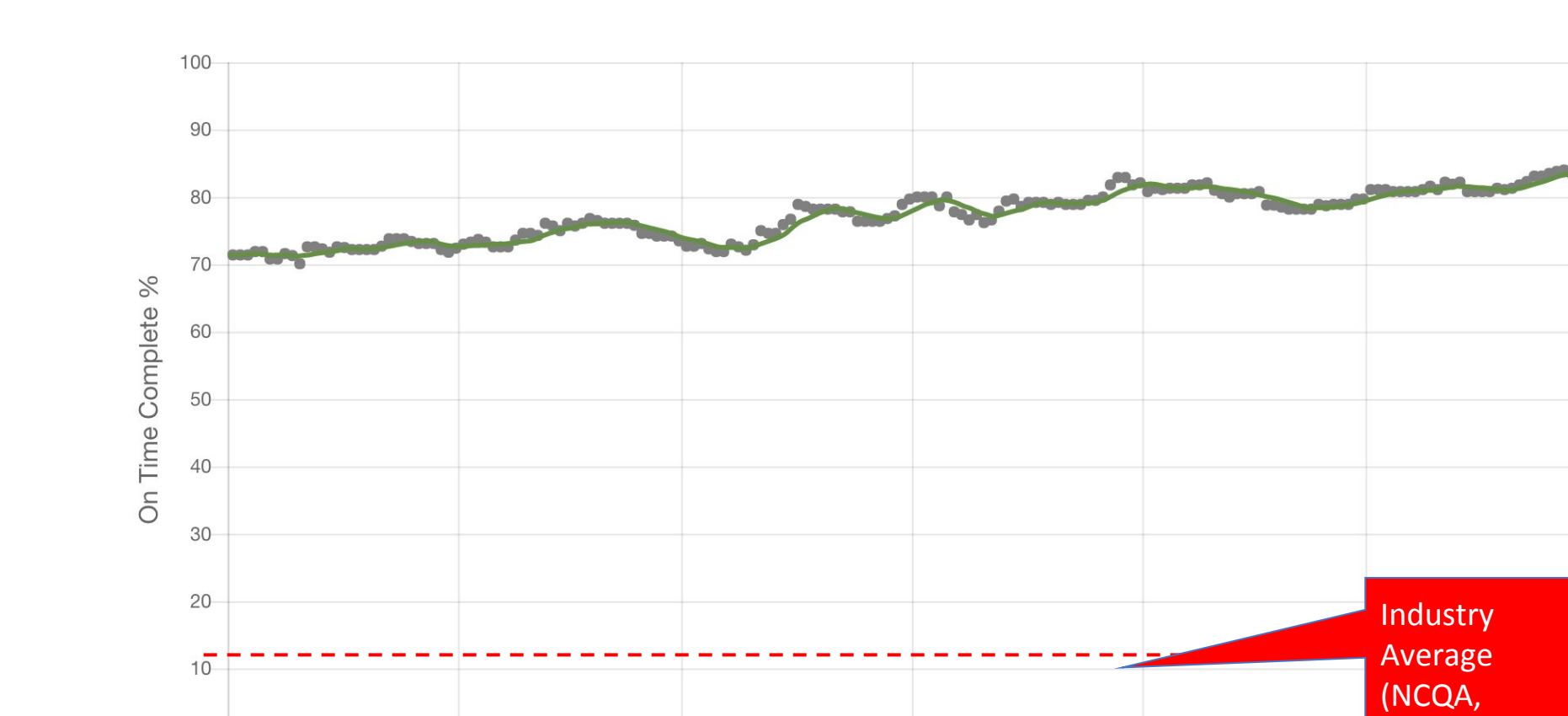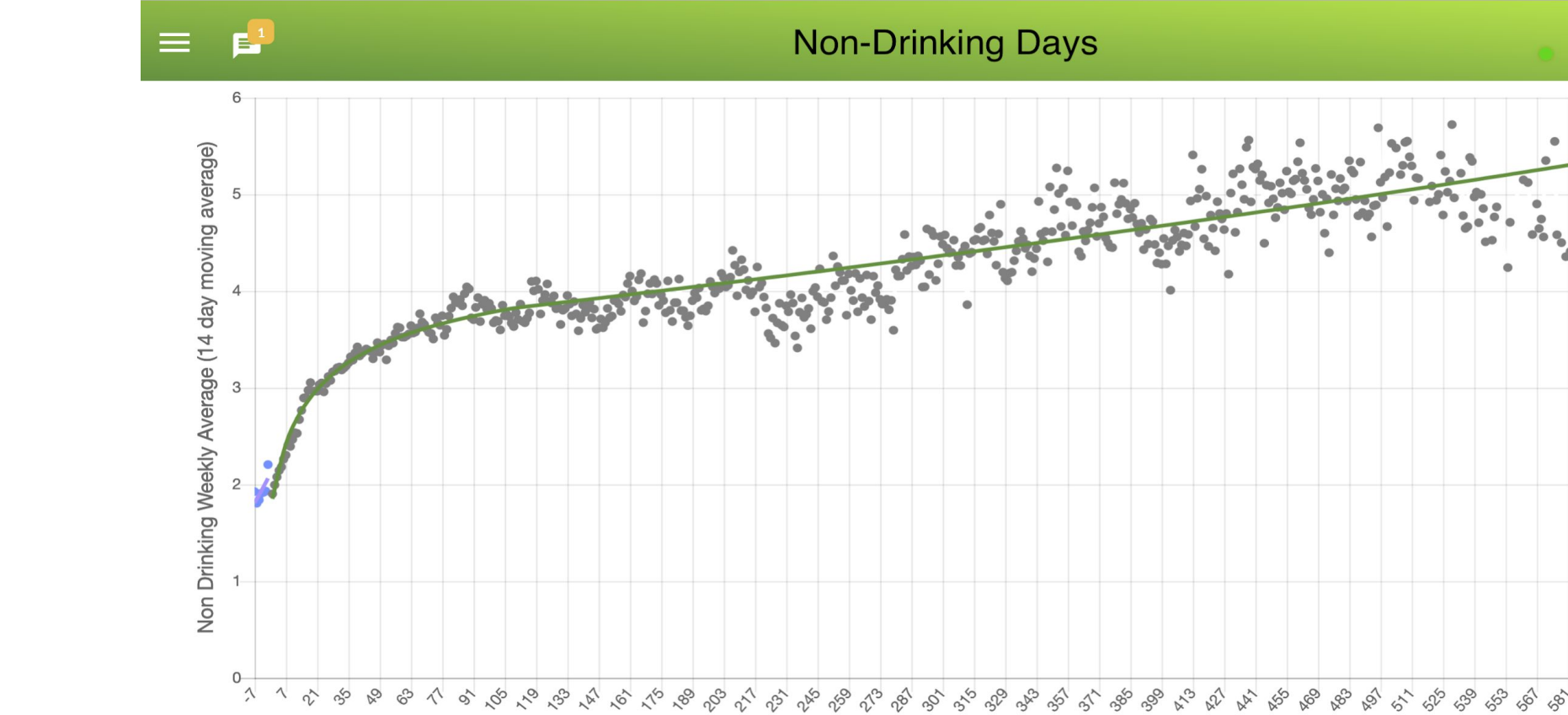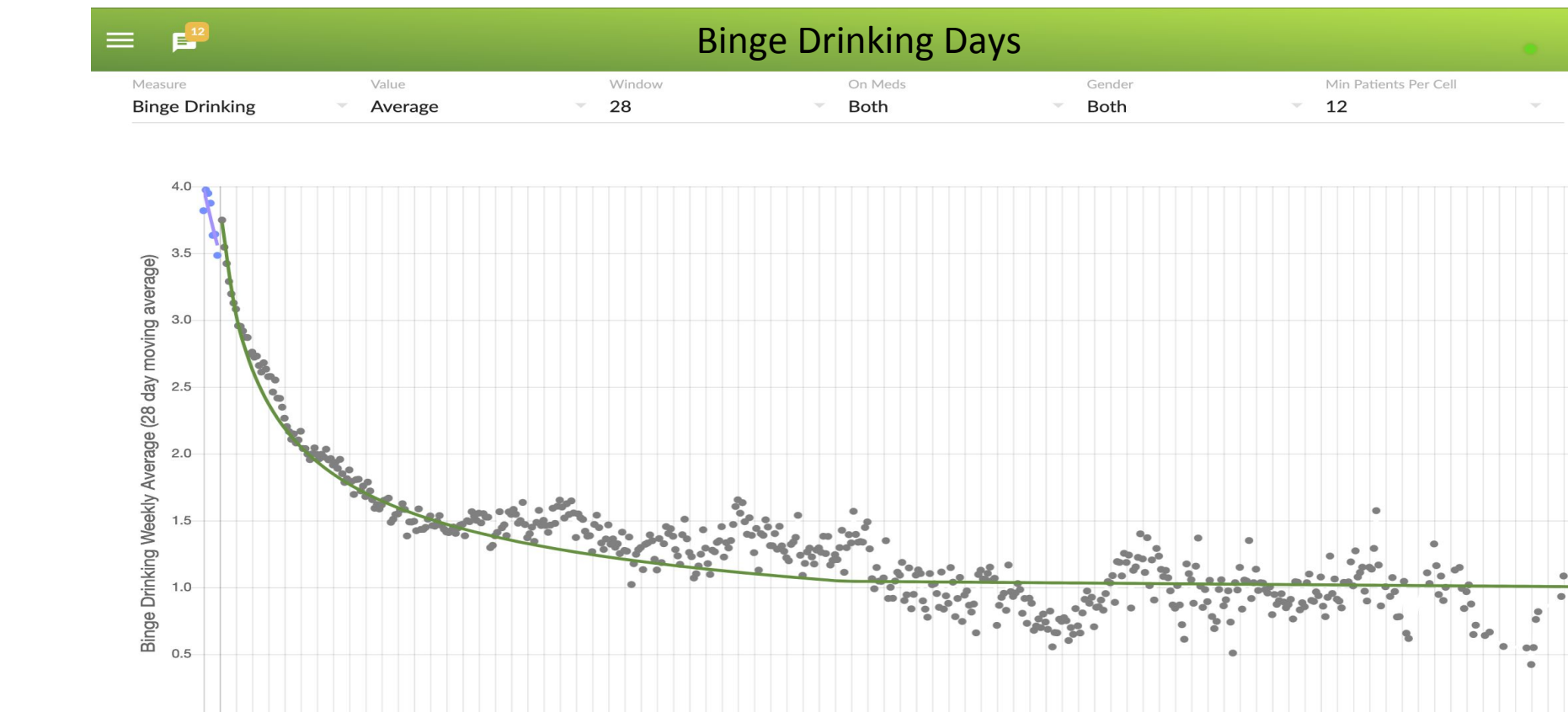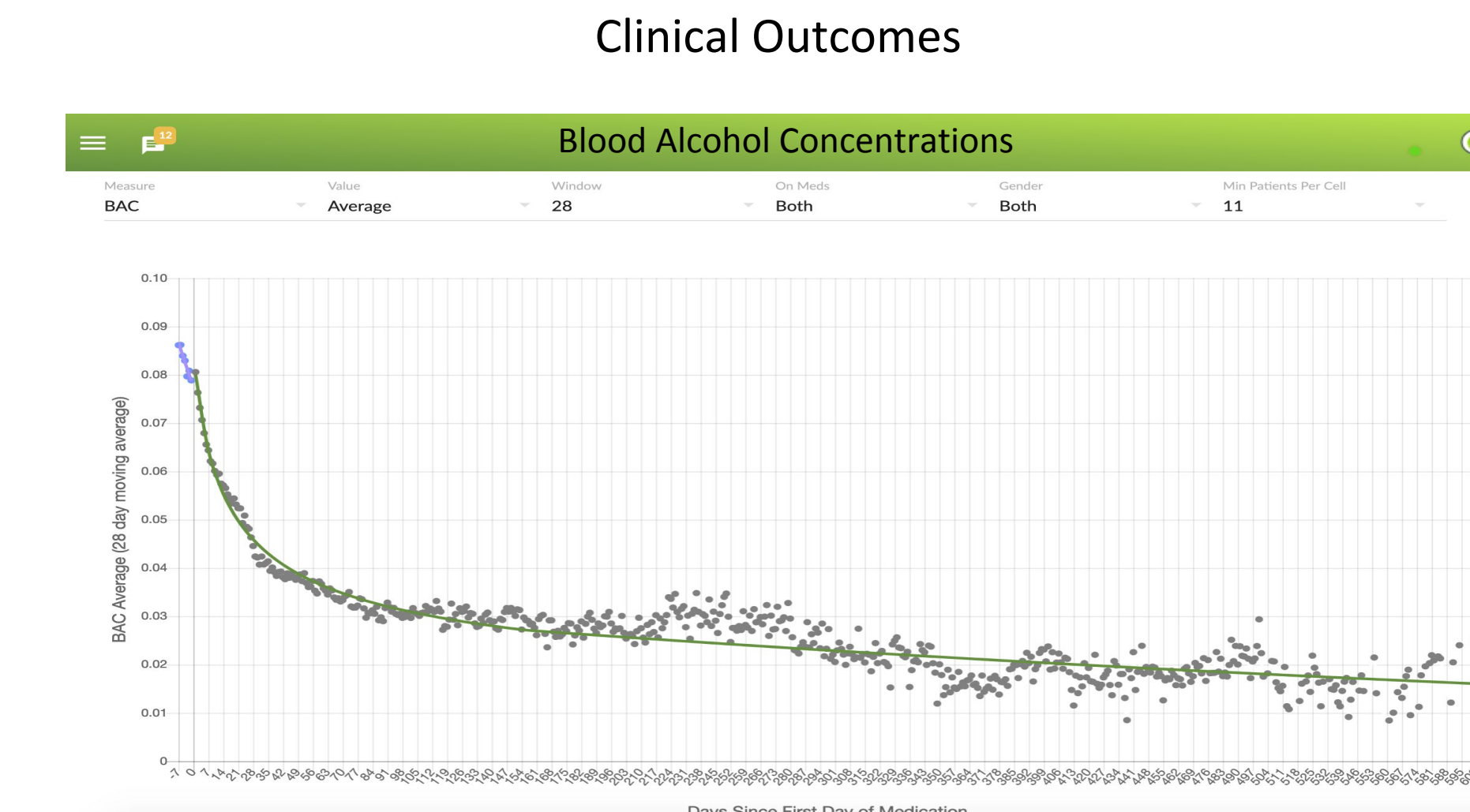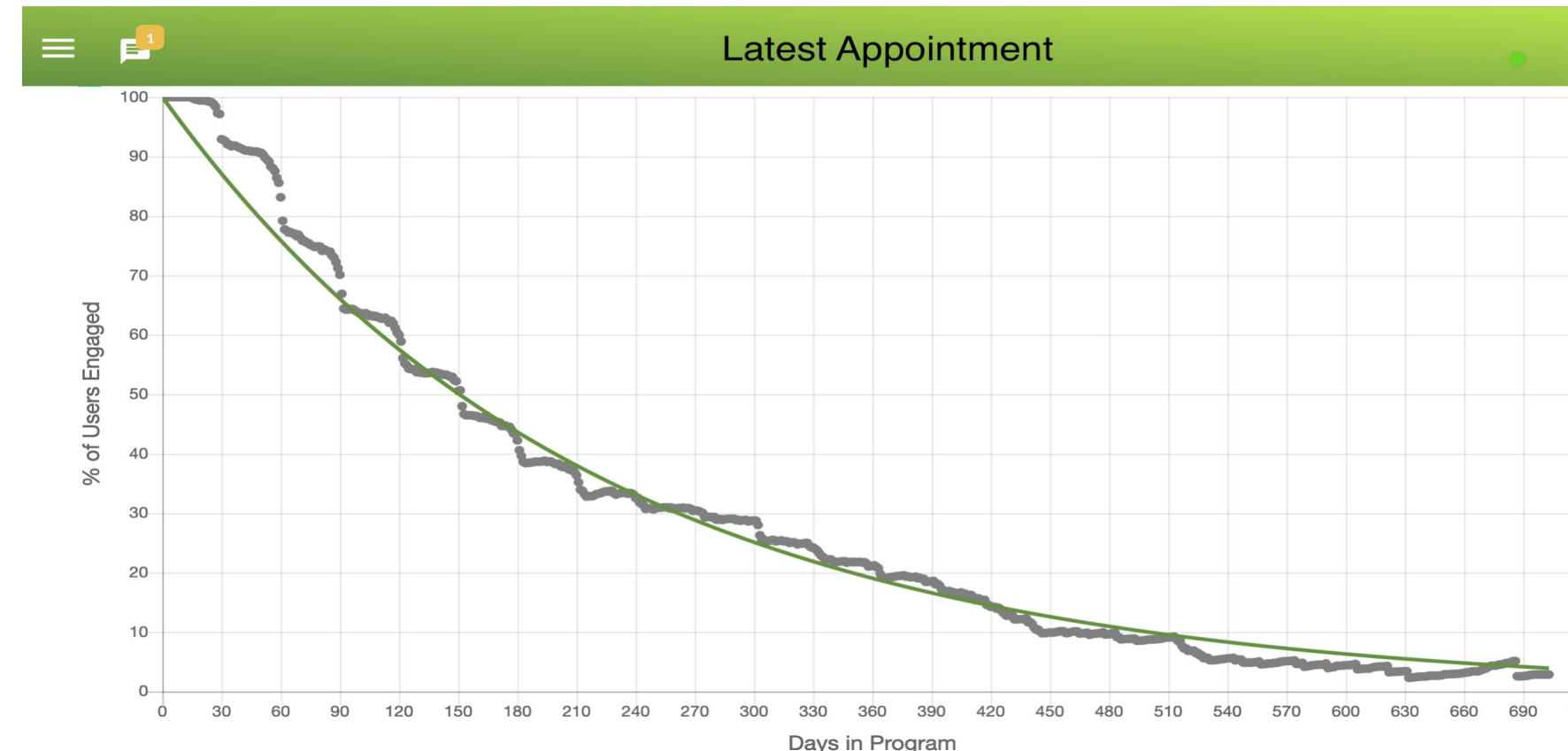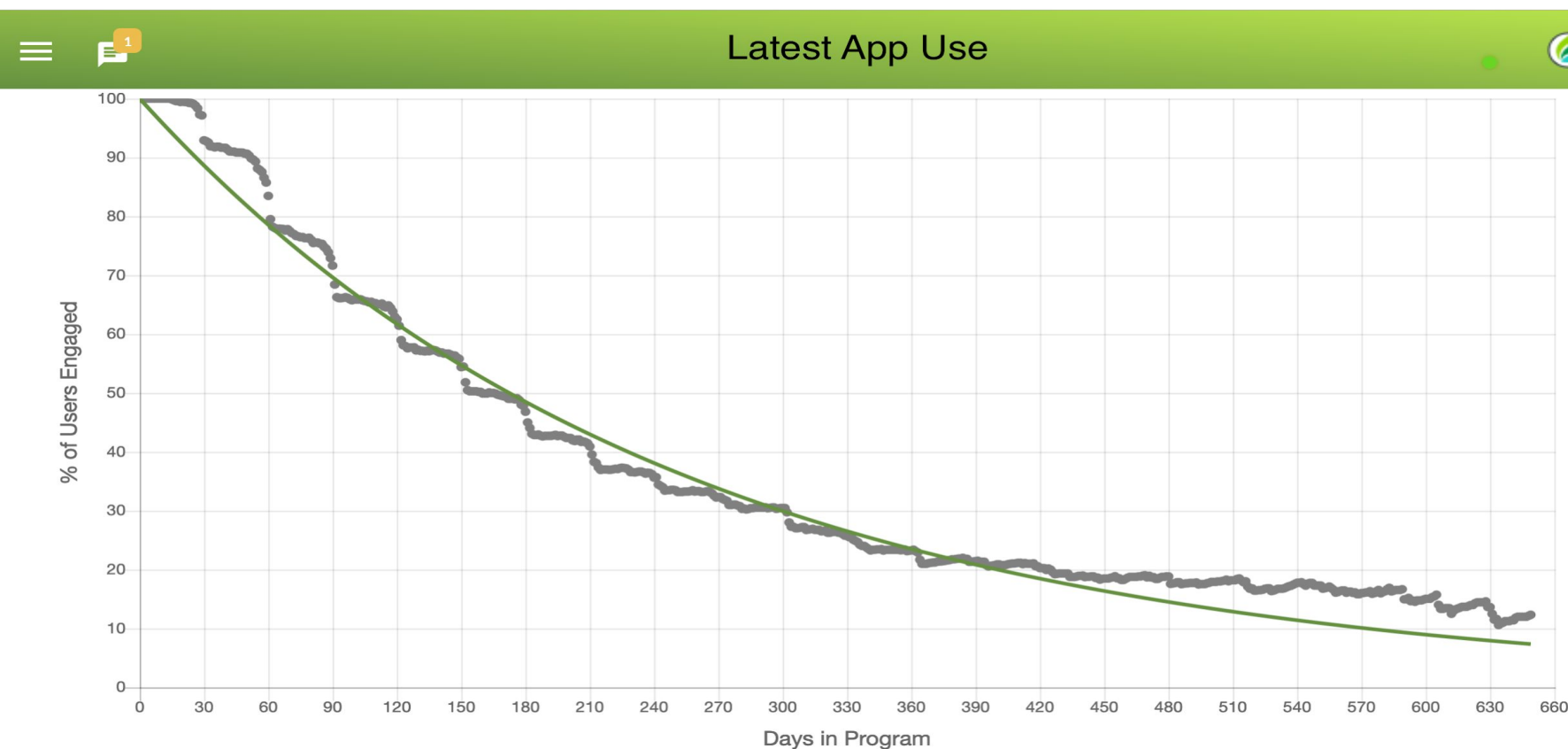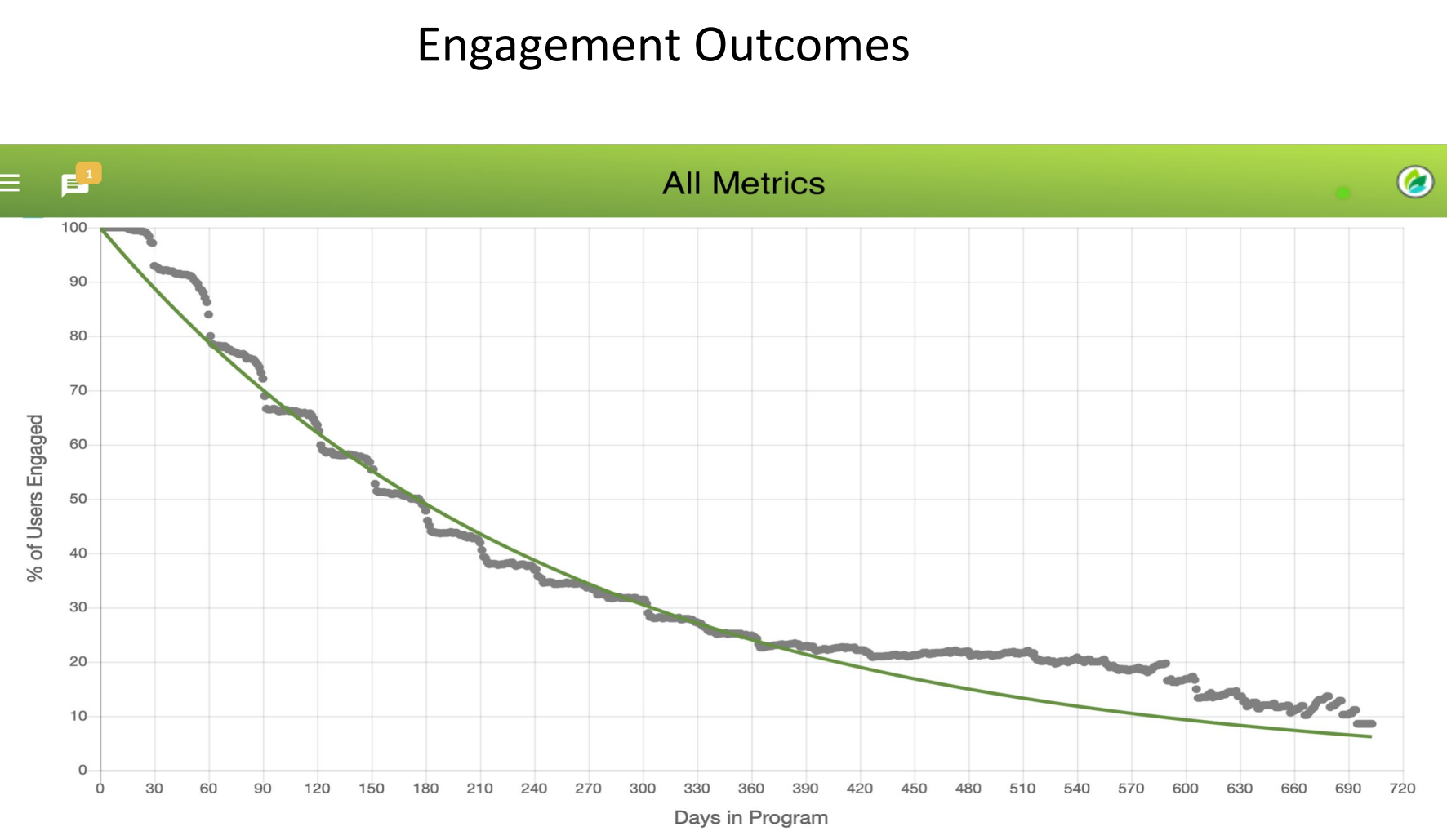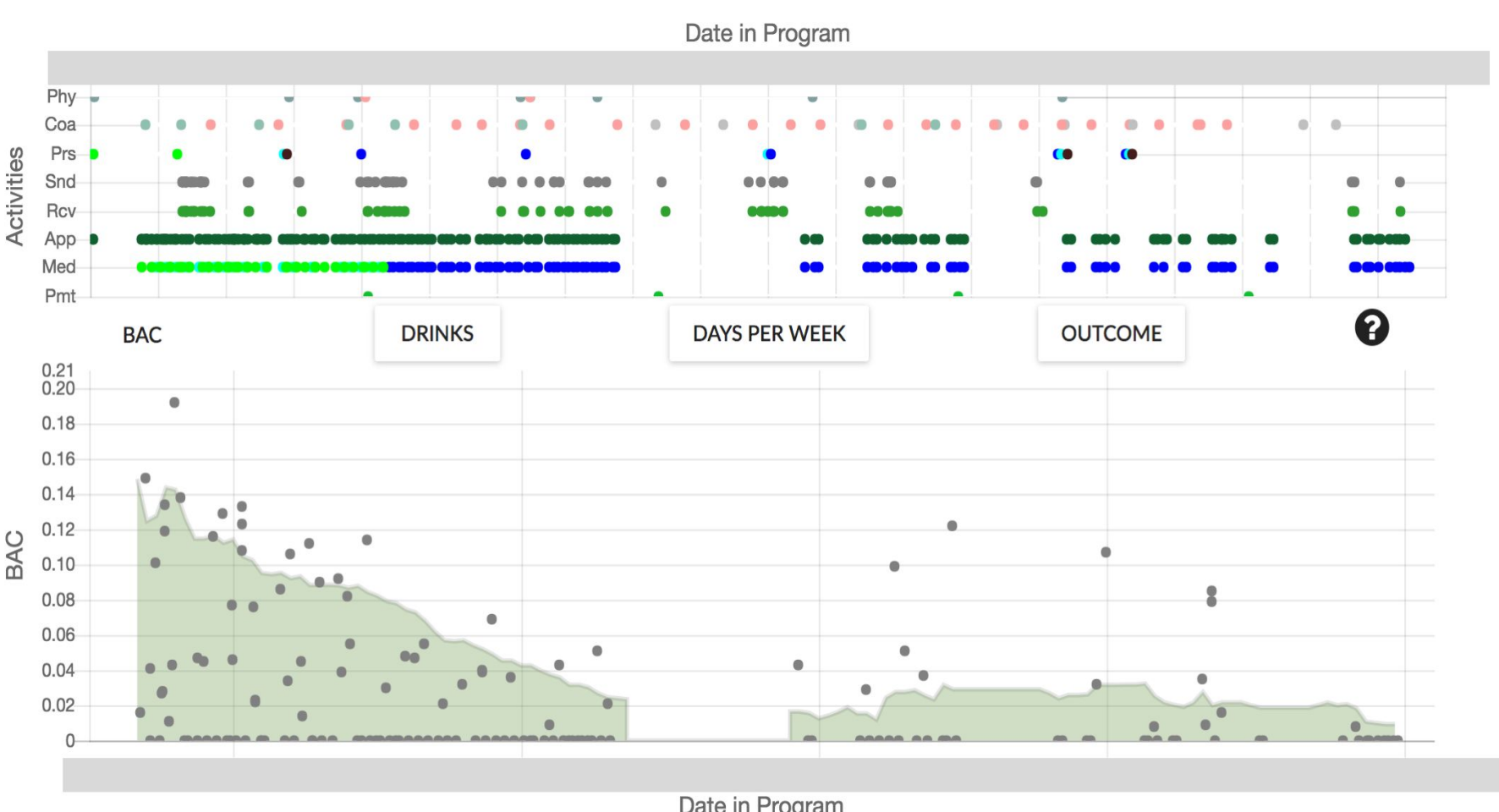
Conclusions:

Participation in Ria is engaging. Ria participants:
- Remaining enrolled in the program, paying a monthly subscription fee of $99-300
- Use the breathalyzer regularly
- Adhere to prescribed medications
- Use the secure text messaging system to communicate with the care team

Participation in Ria is effective:
- Decreased mean BAC from 0.09 to 0.03
- Decreased estimated standard drink intake from 30 to 11.5 per week
- Increased non-drinking days from 1.5 to 4.3 days per week.

Focus on engagement improves:
- Retention
- Treatment Initiation
- Medication Adherence
- Patient Satisfaction

Clinician Facing Dashboard

Engagement Outcomes

All Metrics

Latest App Use

Latest Appointment

Clinical Outcomes

Blood Alcohol Concentrations

Binge Drinking Days

Non-Drinking Days

HEDIS Metrics

How it works

Patient Characteristics (N=448)

Member Age

Stated Drinks on Drinking Days at Enrollment

Stated Drinks/Week at Enrollment

Patient Goal / Psychosocial Problems

Previous AUD Treatment, N=448

Impact of AUD on Health

Impact of AUD on Quality of Life

What is engagement?

(adapted from Higgins) Four attributes define Patient Engagement: personalization, access, commitment, and therapeutic alliance

Engagement Attributes

Attribute	Definition	Ria Engagement Features
Personalization	Interventions conform as closely as possible to the unique desires and circumstances of the patient.	App coordinates partnership between patients, supporters and clinicians. App manages individualized Care Plans
Access	The ability of the patient to obtain information, guidance, and tools to secure consistent, high quality appropriate care	App integrates care with connections to blogs, web sites, groups and supporters. App manages synchronous (clinical visits, BAC readings) and asynchronous (texts, app use, payments, prescription monitoring) interactions
Commitment	The cognitive and emotional factors that empower the patient to exploit available health resources, demonstrated by the patient efforts over time.	App and treatment program report outcomes in an intuitive longitudinal fashion. Patients monitor goals and get specific treatment to achieve goals.
Therapeutic Alliance	Incorporates elements of the patient-provider relationship including quality of the clinical interaction, communication, empathy, or mutual understanding	App supports rapid synchronous and asynchronous communication with individual providers and the full care team, with full documentation of all interactions.

Ria Engagement Behaviors and Metrics

Metric	Frequency and Source
BAC (Blood Alcohol Concentration	1-2X/day from Bluetooth-enabled breathalyzer
App Use	Daily, collected in app
Medication Use	Daily, managed by Care Plan
Prescriptions Issued	Daily, from EHR
Payments	Monthly, rom payment platform
Asynchronous Communication	Daily, in App texts
Synchronous Communication – Care Team	Daily, in App video and audio
Synchronous Communication – Groups	Weekly, in App video and audio
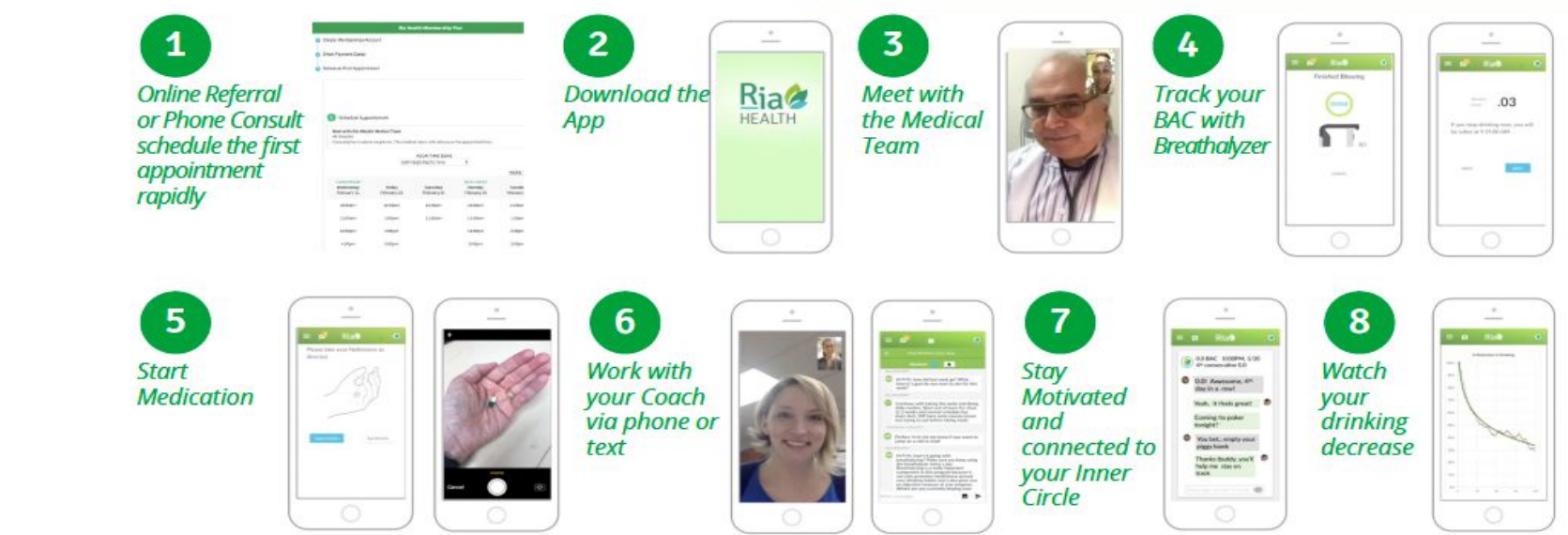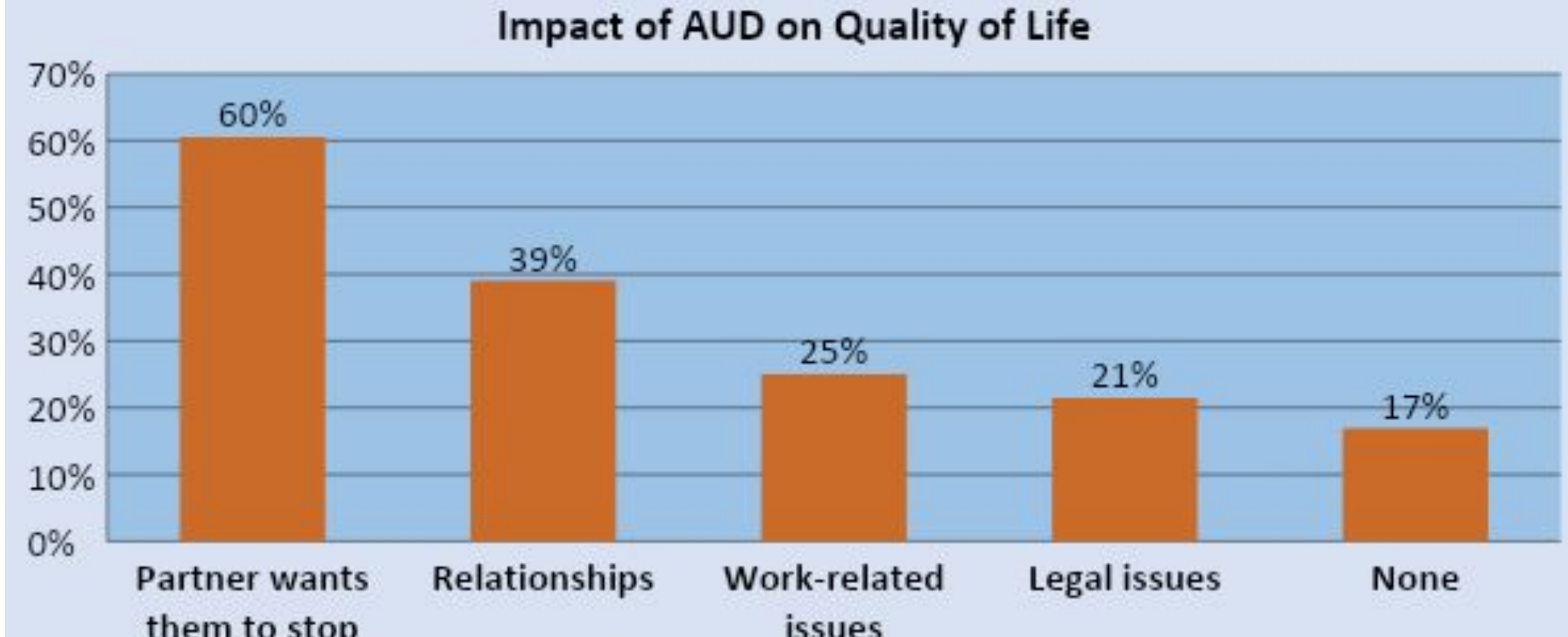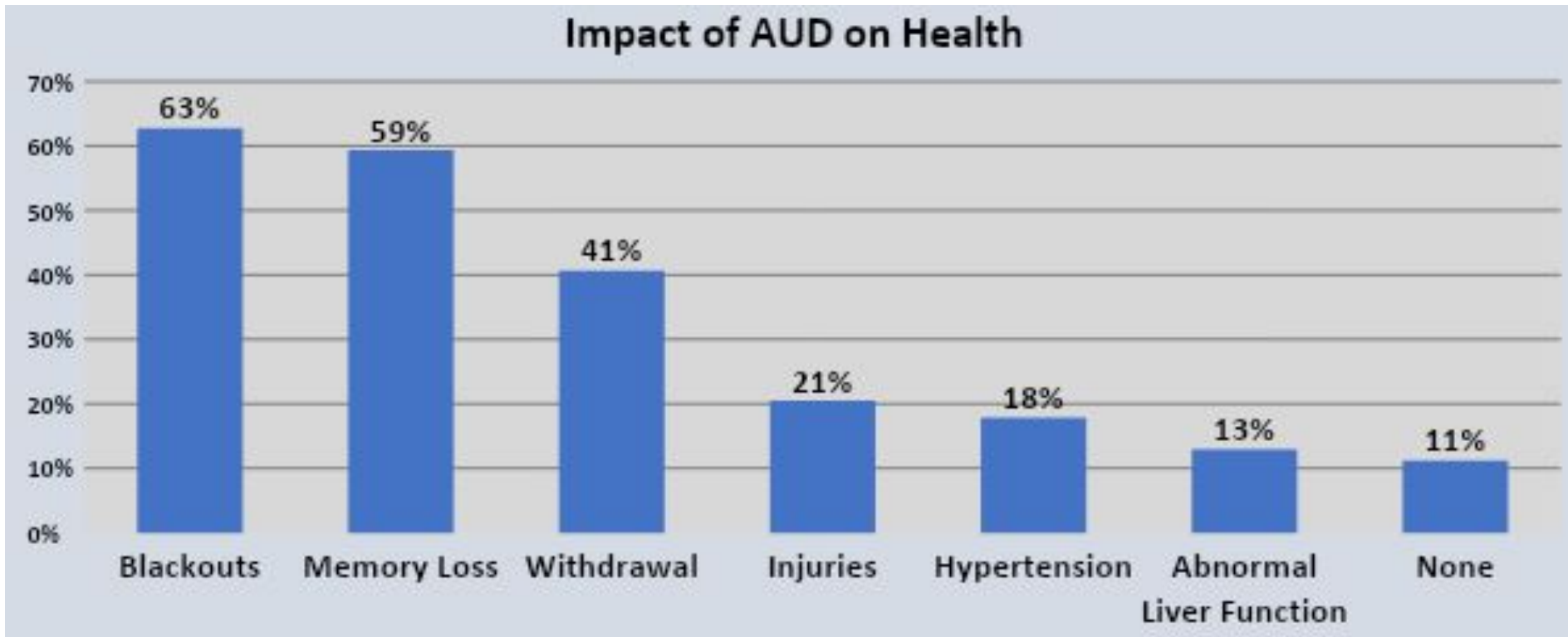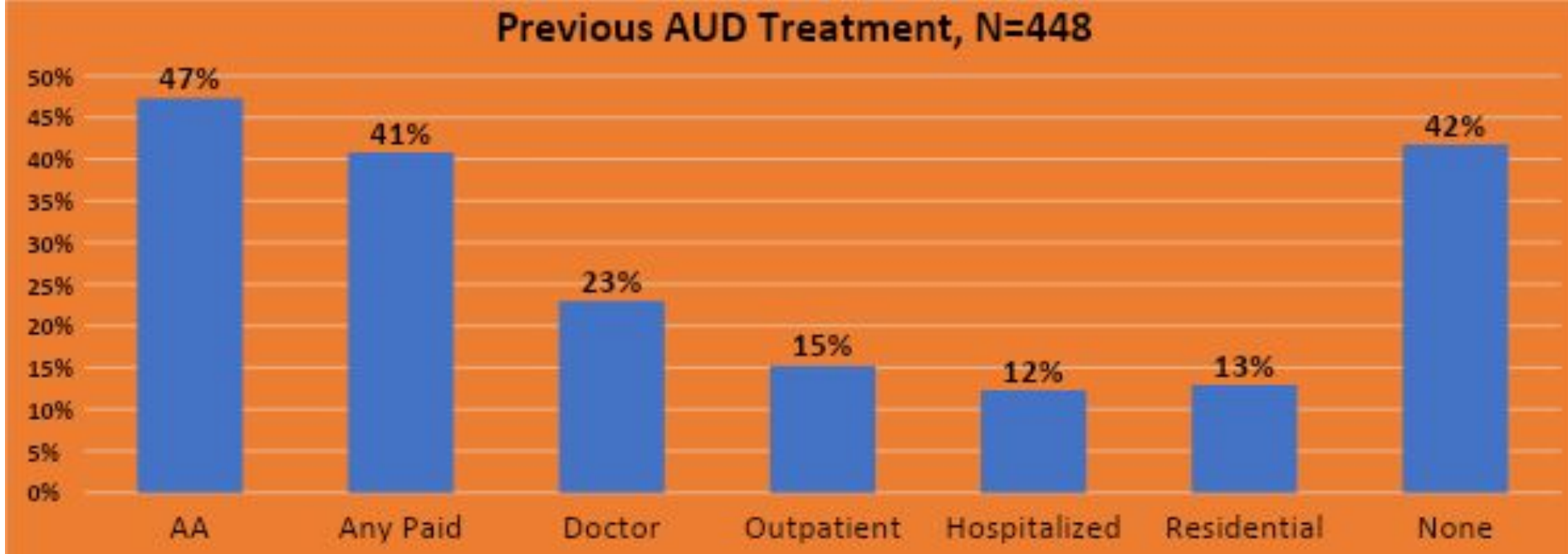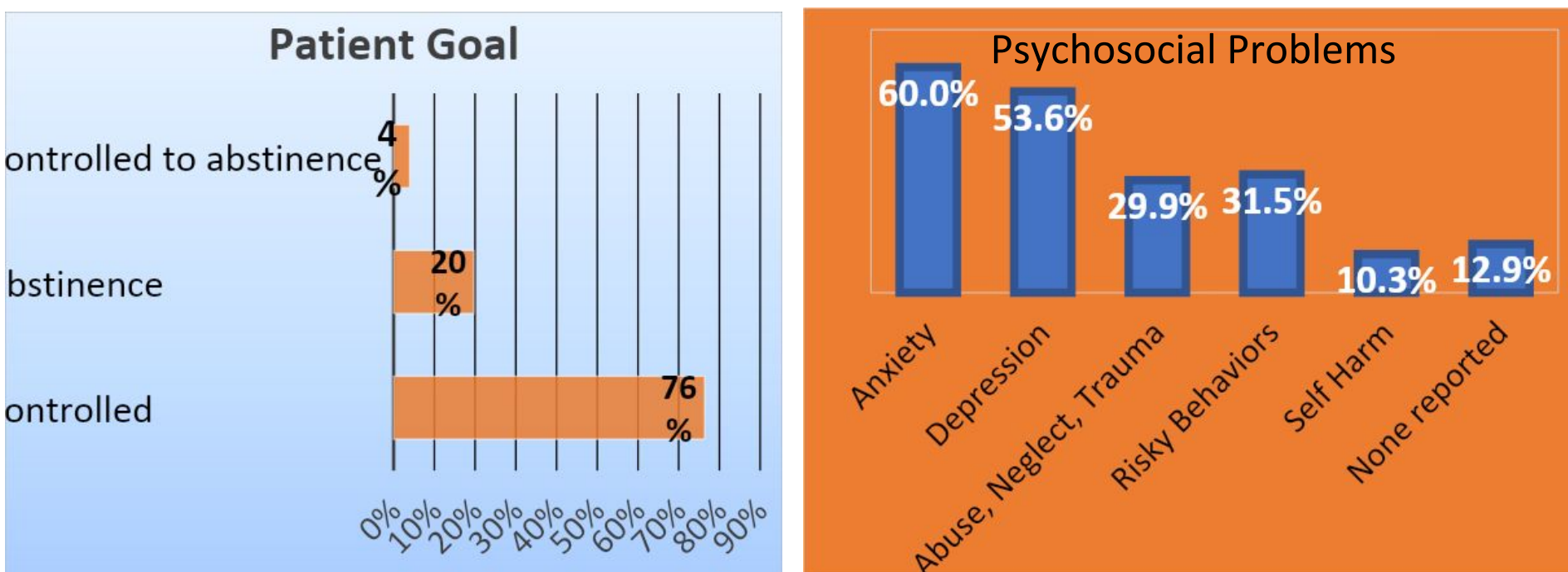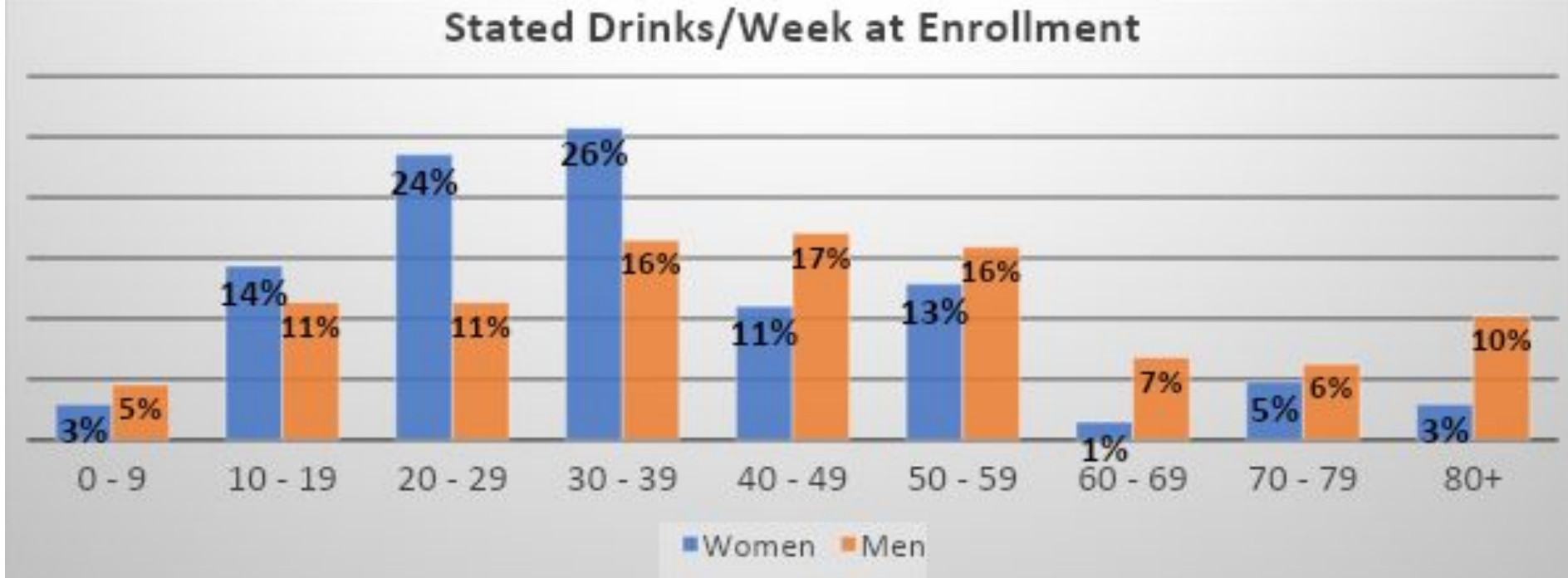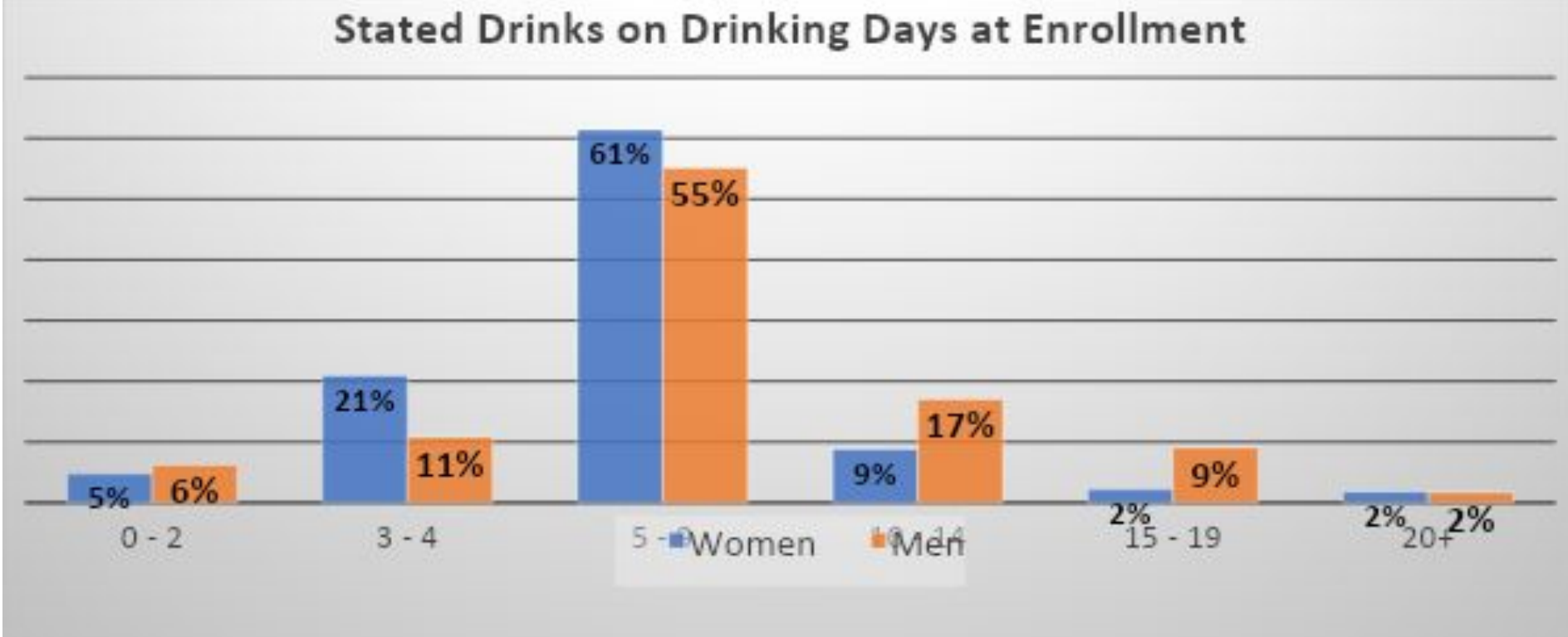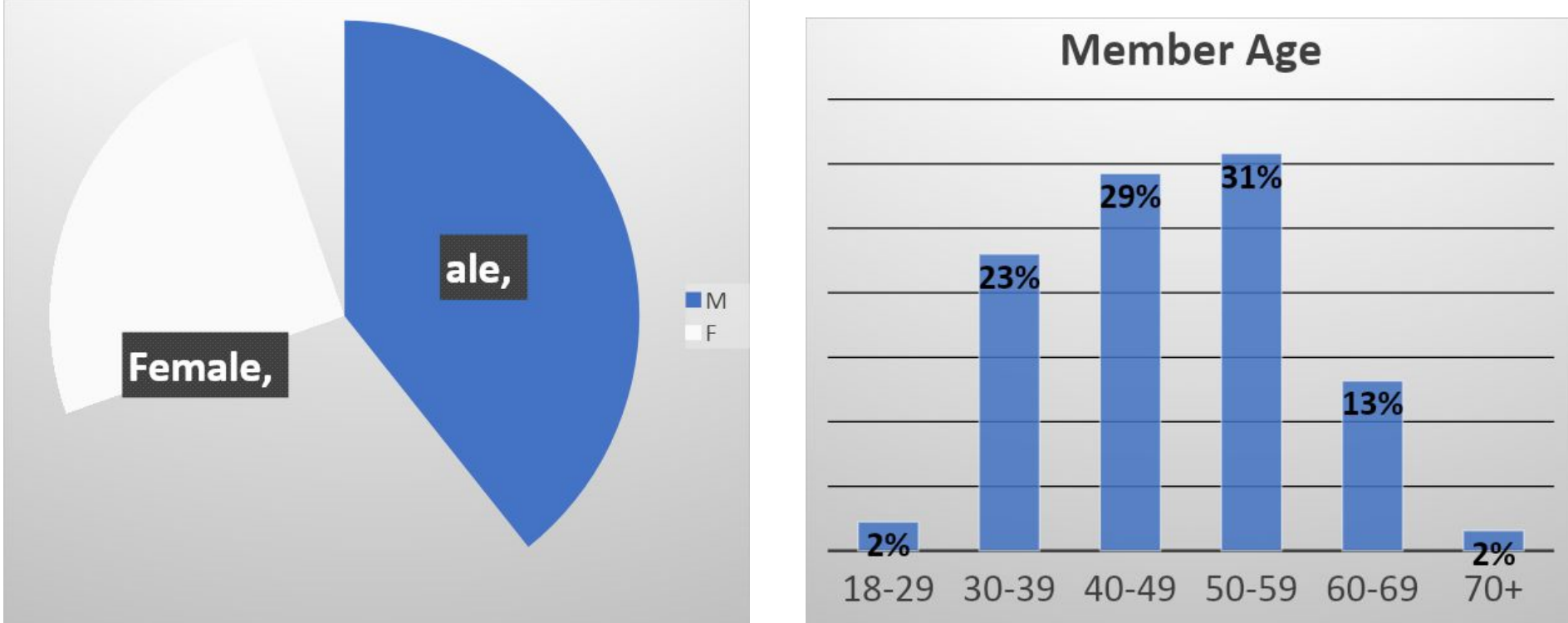
References

1. Baser O, Chalk M, Rawson R, Gastfriend DR. Alcohol dependence treatments: comprehensive healthcare costs, utilization outcomes, and pharmacotherapy persistence. Am J Manag Care. 2011 Jun;17 Suppl 8:S222-34, 2011
2. Bouza, Angeles, Muñoz, and Amate. Efficacy and safety of naltrexone and acamprosate in the treatment of alcohol dependence: A systematic review. 2004 Addiction, 99, 811–828, 2004
3. Coyle, Schreck, Morrow, Coleman, Gardner, Zheng, Ellison, Bushman, Kiser, Mawhinney, Anderson, Castillo-Mancilla. Engagement in Mental Health Care is Associated with Higher Cumulative Drug Exposure and Adherence to Antiretroviral Therapy. AIDS Behav. 2019 Feb 23. doi: 10.1007/s10461-019-02441-8.
4. Chalk, Baser, Halpern and Gastfriend (2011, April). Healthcare cost outcomes for alcohol dependence: A comparison of four treatments. Presented at American Society of Addiction Medicine 42nd
5. Chick, Anton, Checinski, Croop, Drummond, Farmer and Ritson. A multicentre, randomized, double-blind, placebo-controlled trial of naltrexone in the treatment of alcohol dependence or abuse. Alcohol and Alcoholism, 35, 587–593, 2000
6. Harris, DeVries, and Dimidjian. (2004). Datapoints: Trends in naltrexone use among members of a large private health plan. Psychiatric Services, 55, 221, 2000
7. Hermos, Young, Gagnon and Fiore. Patterns of dispensed disulfiram and naltrexone for alcoholism treatment in a veteran patient population. Alcoholism: Clinical and Experimental Research, 28, 1229–1235, 2004
8. Higgins, Larson and Schnall. Unraveling the meaning of patient engagement: A concept analysis. Patient Educ Couns. Jan;100(1):30-36, 2017
9. Kranzler and Van Kirk. Efficacy of naltrexone and Acamprosate for alcoholism treatment: A meta-analysis. AlcoRsim: Clinical and Experimental Research, 25, 1335–1341, 2001
10. Kranzler, Stephenson, Montejano, Wang and Gastfriend. Persistence with oral naltrexone for alcohol treatment: implications for health-care utilization. Addiction, 102, 1801–1808, 2008
11. Krystal, Cramer, Krol, Kirk, Rosenheck, and the Veterans Affairs Naltrexone Cooperative Study 425 Group. Naltrexone in the treatment of alcohol dependence. The New England
12. Journal of Medicine, 345, 1734–1739 2001
13. McCarty, McConnell, Leader and Un. Continued use of addiction medications and impacts on use of health care. Presented at Addiction Health Services Research Conference, San Francisco, CA., 2009
14. Patel, Hopkins, Brooks and Bennett. Comparing Self-Monitoring Strategies for Weight Loss in a Smartphone App: Randomized Controlled Trial. JMIR Mhealth Uhealth. Feb 28;7(2), 2019.
15. Pettinati, Volpicelli, Pierce and O'Brien. (2000). Improving naltrexone response: An intervention for medical practitioners to enhance medication compliance in alcohol dependent patients. Journal of Addictive Diseases, 19, 71–83, 2000
16. Pettinati, O'Brien, Rabinowitz, Wortman, Oslin, Kampman and Dackis. The status of naltrexone in the treatment of alcohol dependence: Specific effects on heavy drinking.
17. Journal of Clinical Psychopharmacology, 26, 610–625, 2006
18. Roozen, de Waart, van der Windt, van den Brink, de Jong, and Kerkhof. A systematic review of the effectiveness of naltrexone in the maintenance treatment of opioid and alcohol dependence. European Neuropsychopharmacology, 16, 311–323, 2006
19. Rösner, Hackl-Herrwerth, Leucht, Vecchi, Srisurapanont and Soyka. Opioid antagonists for alcohol dependence. Cochrane Database of Systemic Reviews, 12, Art. No. CD001867, 2010
20. Srisurapanont and Jarusuraisin. Naltrexone for the treatment of alcoholism: A meta-analysis of randomized controlled trials. The International Journal of Neuropsychopharmacology, 8, 267–280, 2005
21. Streeton and Whelan. Naltrexone, a relapse prevention maintenance treatment of alcohol dependence: A meta-analysis of randomized controlled trials. Alcohol and Alcoholism, 36, 544–552, 2001