



# Efficacy of the Ria Treatment Platform

## The First 230 Patients



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### Abstract

**Aim:** To investigate longitudinal trends in blood alcohol content (BAC) assessments during a novel telehealth treatment for alcohol use disorder.

**Background:** Despite available, efficacious treatments for alcohol use disorder (AUD), only 6.7% of the 15.1 million people diagnosed with AUD in 2015 sought treatment. Barriers such as stigma and lack of transportation make telemedicine by smartphone an attractive alternative. The Ria Health platform is a telemedicine program and smartphone app to help people with AUD decrease their alcohol consumption. Patients access a physician, obtain medication to curb alcohol cravings, and receive support from a recovery coach. As part of the program patients track their BAC through daily breathalyzer assessments linked to their smartphones.

**Methods:** The current study examined breathalyzer data collected daily over a 6 month period, with the analysis restricted to evening breath tests (N= 230; 16,952 observations). Using dynamic structural equation modeling to analyze the ecological momentary assessment data, a linear model was compared against a quadratic model. Deviance Information Criterion supported the quadratic model, which was subsequently used to depict BAC trends graphically.

**Results:** Both the linear (b = -.04 [-.06, -.03], p < .001) and quadratic (b = .01 [.00, .02], p < .01) models showed significant reductions in BAC over time. Mean BAC decreased from .07 at baseline to .03 at 6 months, a 57.1% decrease.

**Conclusions:** Patients using the Ria Health platform reduce their alcohol consumption and maintain reduced use for at least 6 months. More broadly, these results support telemedicine strategies such as providing prescription medications and medical advice via smartphone, rather than relying on the traditional “brick and mortar” treatment centers.

### Introduction

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

The lack of adoption of evidence-based medication-assisted treatments is due to many factors including:

- a shortage of trained and engaged physicians,
- lack of integration of psychosocial with medical treatments,
- onerous time, financial and geographic requirements for accessing treatment
- use of a binary primary outcome (abstinence vs non-abstinence)

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

Patients use a dedicated HIPAA-compliant app to access Ria physicians, obtain medication 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.

From the provider perspective Ria is a Treatment Platform with an Integrated Treatment System

From the patient perspective an Ria is an App

Ria integrates:

- Objective monitoring of alcohol use
- Medical Management
- Substance Abuse Coaching
- Treatment outcome monitoring
- Peer and Family Support
- Methods to engage patients

### Methods

Data were collected through the Ria Treatment Platform.

**Inclusion Criteria:**  
To be included patients needed to:

- have a baseline BAC measured or calculated
- agree to receive medical and psychosocial management of AUD

**Exclusion Criteria:**  
We excluded patients who

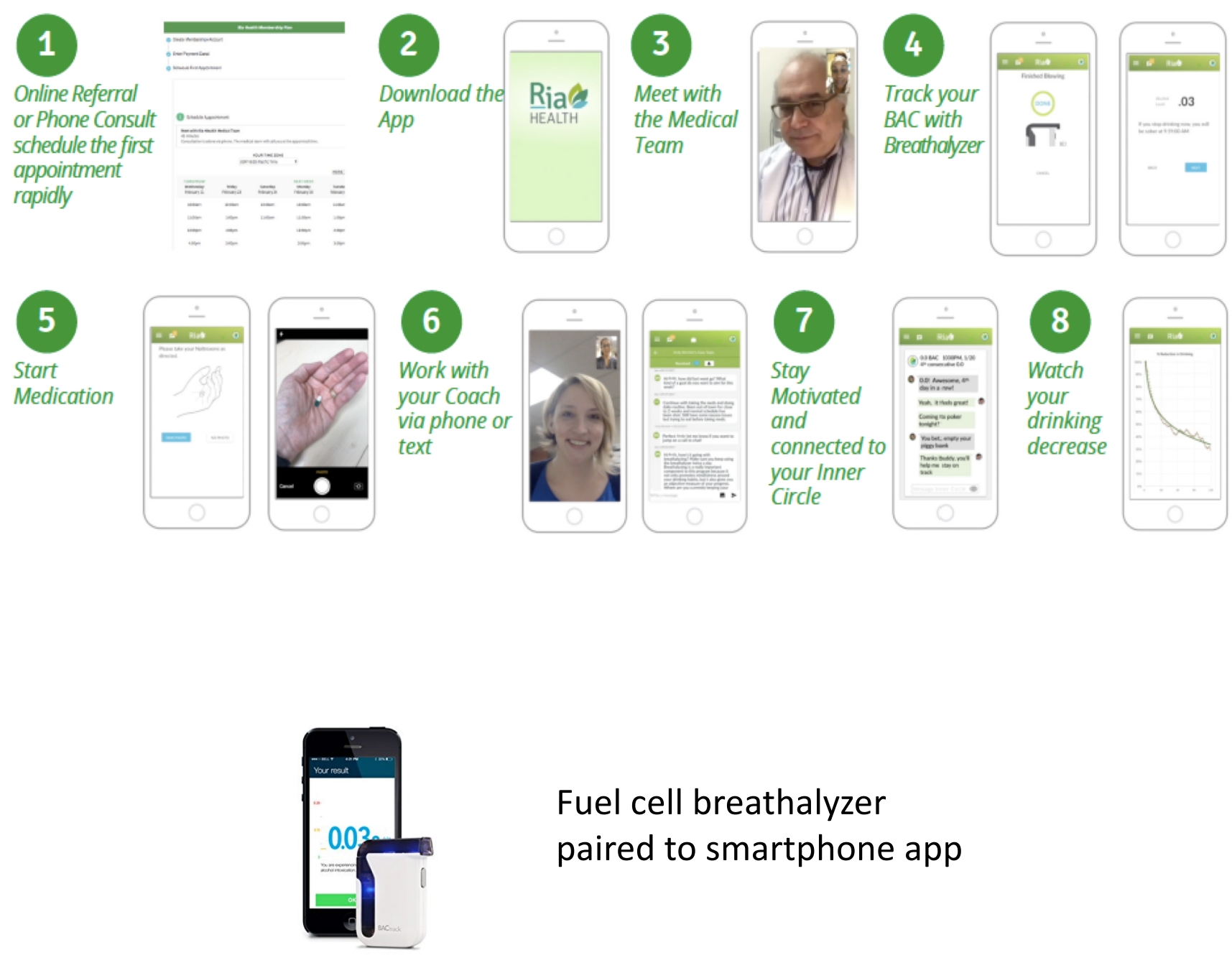
- never had an alcohol use baseline established (N= 26)
- only did product testing were excluded (N=7)

All evening breathalyzer readings performed by enrolled patients and collected with the Ria App over a 6 month period (N= 230; 16,952 observations).

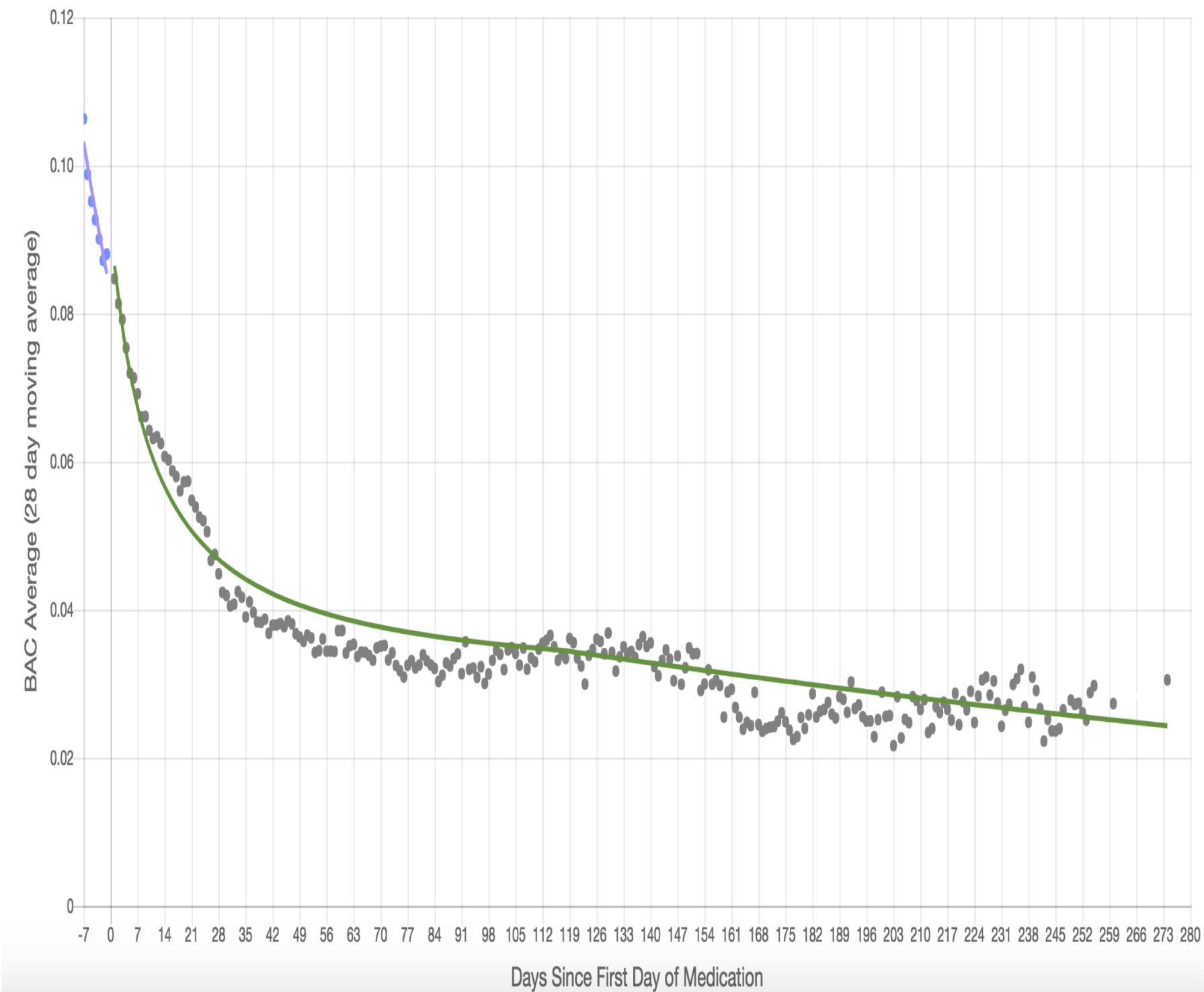
Data (de-identified) were analyzed by an independent 3<sup>rd</sup> party (Friends Research Institute).The FRI Investigators independently designed the analysis strategy and performed the analysis.

Data analyzed using dynamic structural equation modeling with a linear model compared against a quadratic model. Deviance Information Criterion supported the quadratic model, which was subsequently used to depict BAC trends graphically.

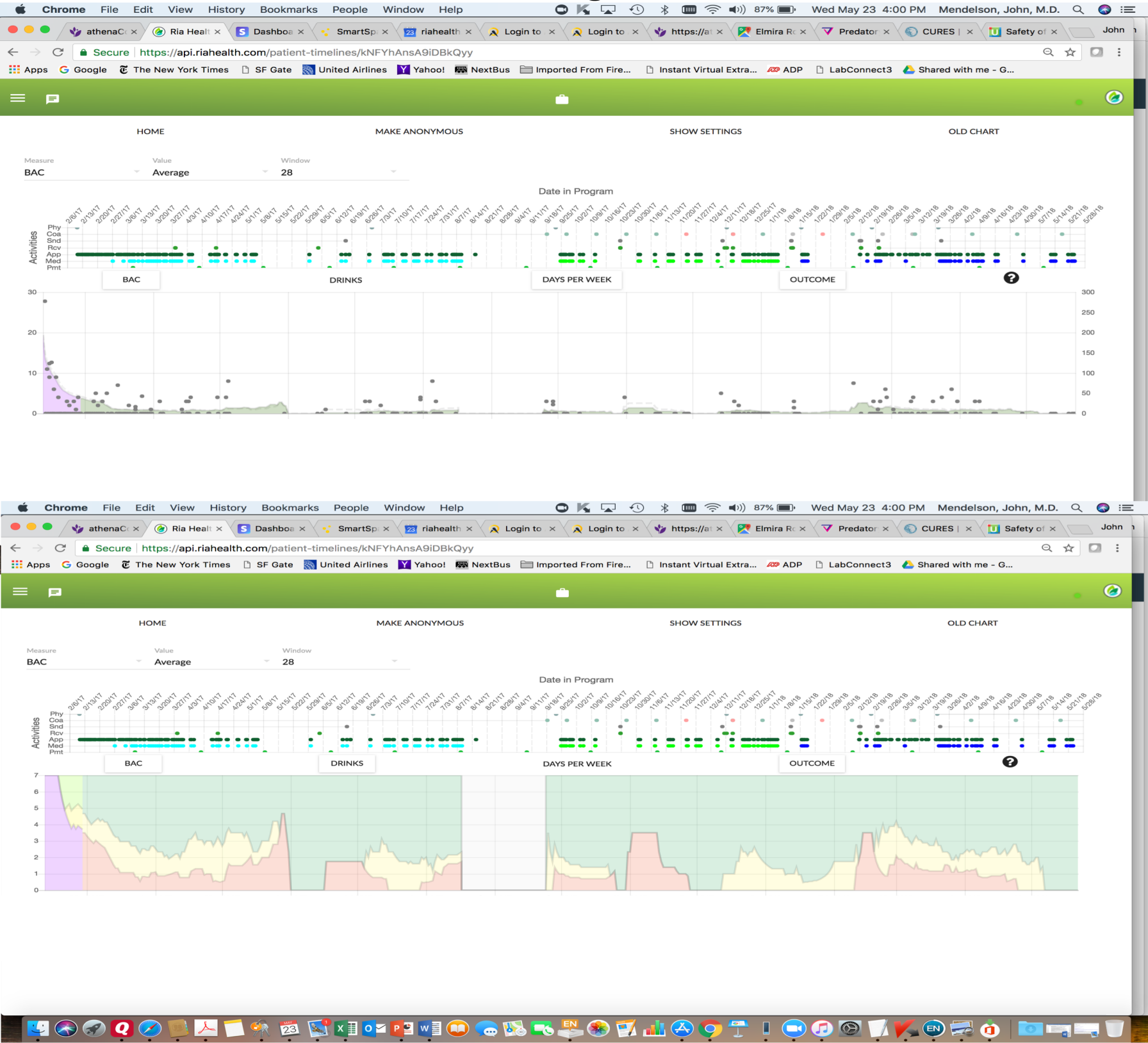
### How it works



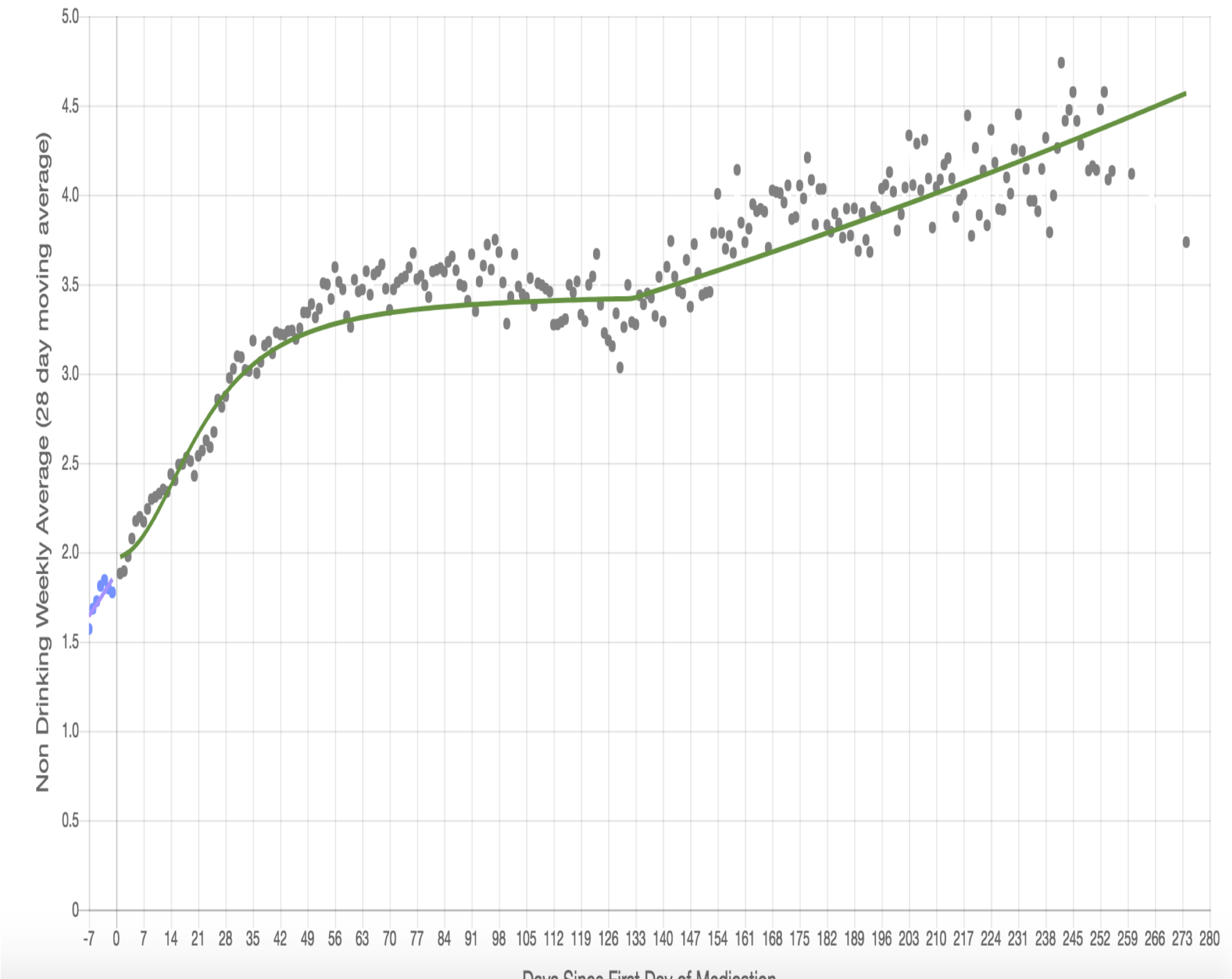
### Reduction in Mean BAC



### Clinician Facing Screenshot



### Increase in Non Drinking Days



### Legend

Each visualization shows the progress of Ria Health patients in the treatment program. All data is based on objective measurement of BAC collected using the integrated bluetooth breathalyzer.

X-axis is “Day in Treatment”: negative days are the baseline period (pre medication) starting at day -7 and progressing to day -1, positive days start with the first day on craving-reduction medications which is when the full set of Ria Health treatment interventions are underway: technology supported at-home medical management, coaching to assist in behavior modification, objective measurement and feedback, and social support.

Y-axis is a 28-day moving average of the metric.

Objective performance metrics:

- BAC – breath alcohol concentration as reported by breathalyzer
- Weekly standard drinks: Number of drinks per week, calculated using Widmark formula based on BAC, gender, and weight. Unlike BAC, standard drinks vary with gender; the population as a whole baselines at 37 drinks/week on average, while men start at 49 drinks/week and women start at 28 drinks/week.
- Binge Drinking Days: days per week where patient drinks at a “Binge” level as defined by NIAAA/CDC
- Non-Drinking Days: days per week where the patient blows a 0 as their maximum reading

Reviewing this performance data for each individual patient is a regular part of our treatment program.

### Results and Conclusions

#### Results

Both the linear (b = -.04 [-.06, -.03], p < .001) and quadratic (b = .01 [.00, .02], p < .01) models showed significant reductions in BAC over time.

- Mean BAC decreased from .07 at baseline to .03 at 6 months, a 57.1% decrease.

#### Conclusions

**Participation in Ria is effective**  
Ria patients:

- Decreased mean BAC from 0.07 to 0.03
- Decreased estimated standard drink intake from 30 to 10 per week
- Increased non-drinking days from 1.5 to 4.3 days per week.

**Participation in Ria is engaging**  
Ria patients:

- Remain enrolled in the program, paying a monthly subscription fee of \$99-249
- Use the breathalyzer regularly
- Adhere to prescribed medications
- Use the secure text messaging system to communicate with the care team

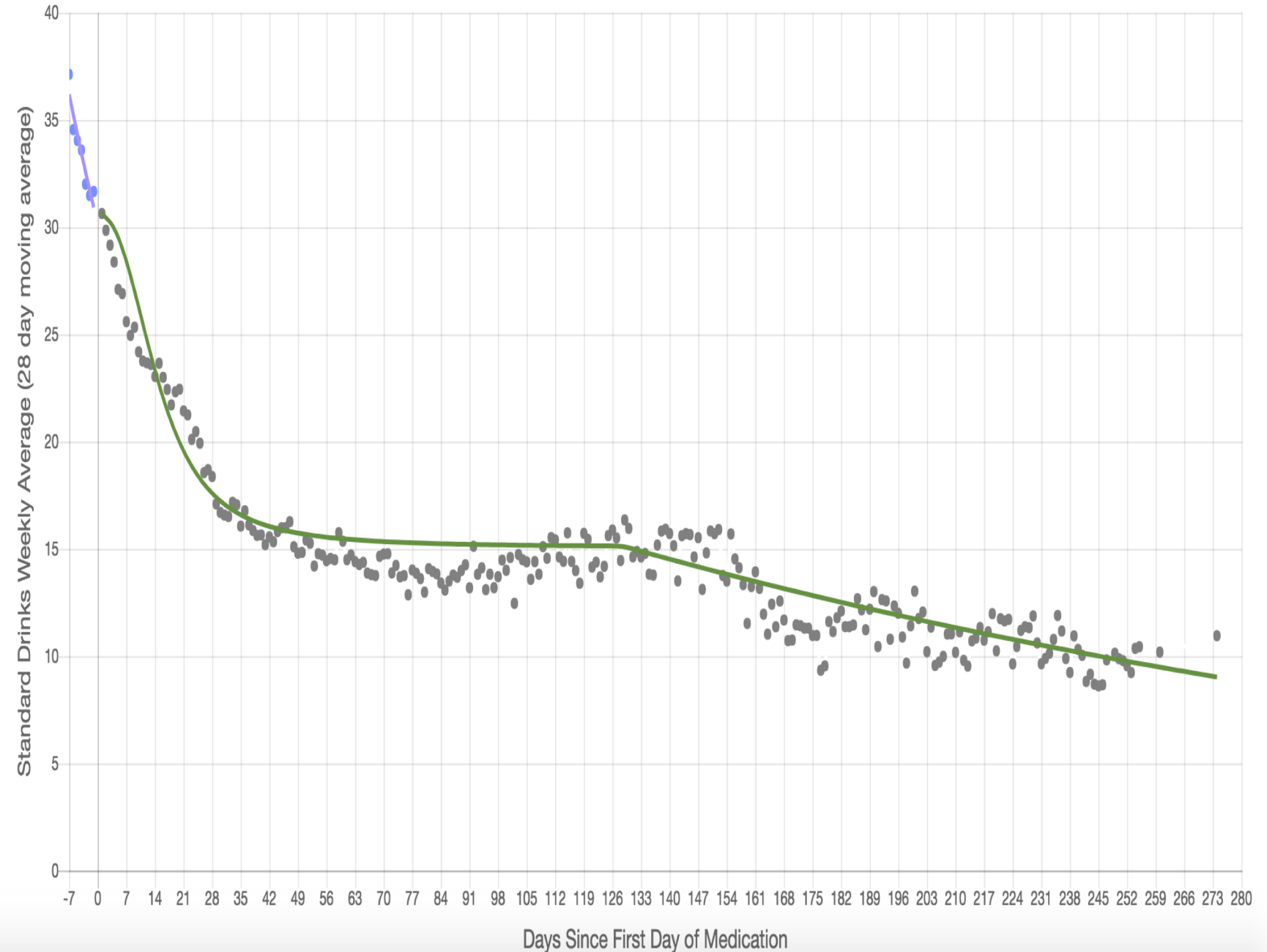
As of March 23, 2018 Ria enrolled 393 patients.

At the 180 day point 57% remained enrolled and engaged.

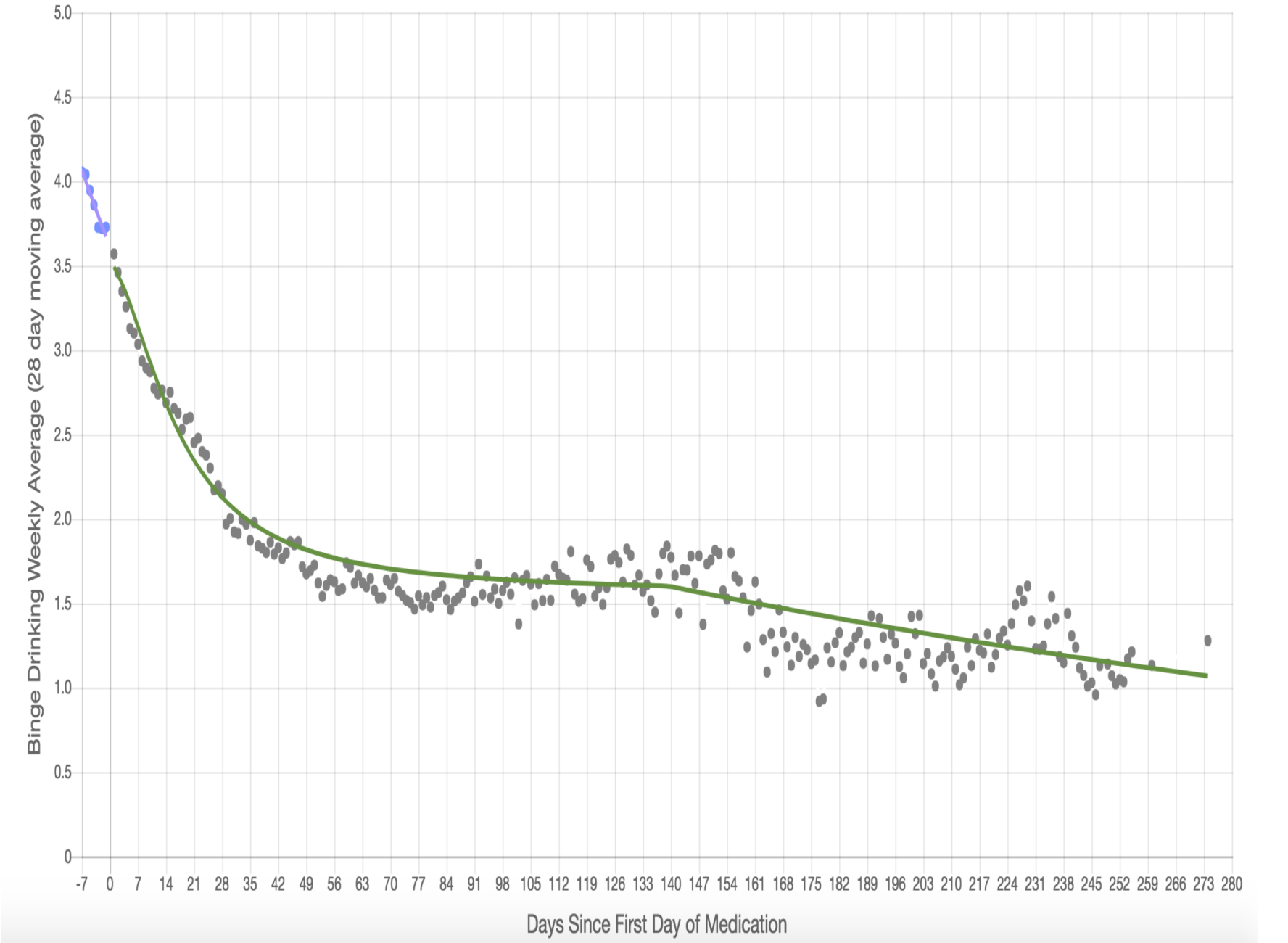
**Ria is Big Data**  
Ria patients contributed

- 74,963 engagement data points including:
- 40,691 breathalyzer readings
- 13,479 medication adherence confirmations
- 6,857 care team visits
- 11,822 in-app text messages and
- 2,114 payments

### Reduction in Standard Drinks per Week (mixed gender)



### Binge Drinking



### Engagement

