

BACKGROUND

College and Alcohol Use Disorder

- AUD: problematic alcohol use resulting in physical, social, or emotional impairment
- Collegiate AUD rates **3X higher** than general population
- 1/3** of AUD positive students develop chronic AUD

Current Screening methods for students

- College mandated programs
- University health service referrals
- Self screening



Current Screening methods are ineffective

- Only **3.6%** of students with AUD think their drinking is problematic
- Students who do seek help wait until problems are severe
- Students are not opposed to brief interventions targeting alcohol use
- Largest barrier to treatment is students **unawareness** of their risk

3 / 144 (2.1%)	11 / 144 (7.6%)	111 / 144 (77%)	83 / 144 (57.6%)
Believe they have AUD	Report being screened or assessed for AUD	Would consider changing their drinking if they had AUD	Would consider seeking treatment if they had AUD

Benefits of social media for AUD screening

- Passive
- Dynamic/Multifaceted
- Widespread
- Machine learning techniques provide a method for processing and extracting features from this type of data

METHODS

Participants

- 570 undergraduates (149 female)
- 144 AUD positive students (25.2%)

Measures

- SCID-V (DSM criteria for AUD Diagnosis)
- Downloaded social media data from Facebook (required), Twitter, and Instagram

1. Alcohol is often taken in larger amounts OR over a longer period than was intended.	?	1	2	3	E2
2. There is a persistent desire OR unsuccessful efforts to cut down or control alcohol use.	?	1	2	3	E3
3. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects.	?	1	2	3	E4

FACEBOOK DATA

Posts	Friends	Comments
Photos and Videos	Saved Items	Following /Followers
Stories	Marketplace	Profile Information
Likes and Reactions	Pages	Groups
Pokes/Notifications	Your Places	Payment History
Private Messages	Phone Calls/Messages	About you
Events	Location	Apps and Websites
Search History	Security/Login Info	Ads

Anonymous omg us!! We were basically drunk all last semester 🍷

Like · Reply · 1m

"I only have half the bottle of wine I bought an hour ago... bottoms up"

👍 Likes

Jack Daniels

I'm not drunk – I'm from Wisconsin

Tipsy Bartender

Let's Have a Beer

Drunk Memes

Group: SORORITY

Anonymous Any brunettes selling fakes? Need one TONIGHT

Feb 27, 2016, 7:43 PM

DISCUSSION

Current Social Media Model

- Allows choice of cut points for providing AUD feedback that are more clinically useful than current screening methods provide

Limitations

- Only analyzed using 4 Facebook data sources, 21 more Facebook sources and 2 other social media platforms remain
- Limited model considerations and feature extraction methods

Future Directions

- Prediction of quantitative symptom count and severity
- Prediction of areas of dysfunction
- Day by day prediction of binge drinking risk

Implementation

- Suite of wellness apps where students opt in to receive feedback about AUD risk and drinking behaviors

ANALYSIS

1. Natural Language Processing

anger	sad	social	family	friend	female	male	cogproc
0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
0.00	0.00	7.09	0.24	0.98	0.98	0.98	4.40
0.36	2.40	16.59	2.40	2.40	2.88	1.32	6.73
0.79	1.19	16.21	1.98	4.74	0.79	3.16	4.35
1.43	0.95	10.71	0.71	1.19	1.90	0.71	5.48
0.00	0.00	55.17	0.00	0.00	0.00	0.00	3.45
2.80	0.65	13.94	1.08	1.42	1.69	1.19	8.18
0.22	0.65	11.29	1.31	0.87	1.20	0.87	7.69
0.65	2.61	8.50	1.96	0.65	1.31	0.65	1.96

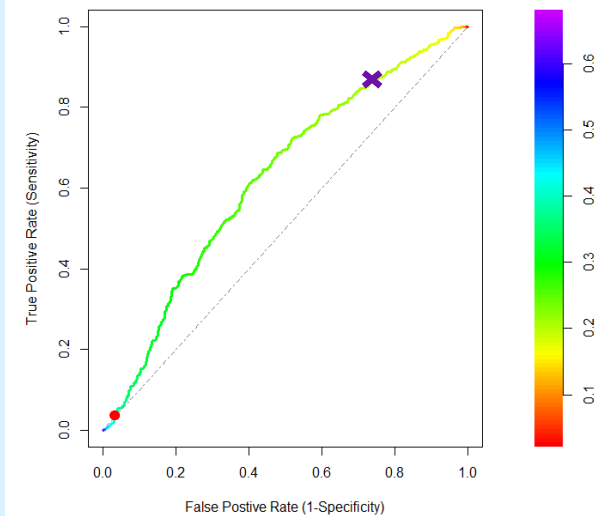
- Linguistic Inventory and Word Count (LIWC)
- Bag of Words (BOW)
- Singular Value Decomposition (SVD)
- Word2Vec (W2V)

2. Cross Validation

- Method for obtaining best estimates of model performance in new data
- 3 repetitions of 10-Fold repeated cross validation

RESULTS

ROC curve
AUC = 0.6219915



Best Model: GLM Elasticnet
Logistic Regression

Best Overall Accuracy: 74.3%

● **Current screening methods:**
Sensitivity = .02 Specificity = .99

✕ **Potential model cut point:**
Sensitivity = .87 Specificity = .24