Objective, Continuous Field Measurement of Alcohol for Event-Level, Population, and Policy Research

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As required by the Alcohol Policy 18 Conference, I/we have signed a disclosure statement and note the following conflict(s) of interest:

None
Collaborators and Funding

- Spruha Joshi
- Lindsey Fabian
- Kath Lenk
- William Baker
- Darin Erickson
- Traci Toomey

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The content of this presentation does not necessarily represent the views of the National Institute of Alcohol Abuse and Alcoholism or the National Institutes of Health.
TOGA Project Aims

• **Aim 1** Develop a training program to adopt and implement effective and feasible policies and procedures to reduce alcohol-related risks at Fraternity parties.

• **Aim 2** Pilot test the training program and evaluation methods.
Feasibility Study

- Candidate evaluation method
- Convenience sample of fraternity members
  - n=45
  - 3 fraternities
  - 2 Universities
- 7-day field study
- Data collection 30 minute intervals
- 2 subjects did not complete the 7 day protocol (96% compliance)
Data points

• 13,622 total measurements
• For each subject
  - 316.8 measurements
  - 6 ½ days
• 5 variables
  - Date
  - Time
  - Transdermal Alcohol Concentration (TAC)
  - IR Voltage
  - Temperature
• 1,665 non-zero alcohol events (12.2%)
# Client Report

1/29/2017 - 2/7/2017

<table>
<thead>
<tr>
<th>Client:</th>
<th>2799, Participant</th>
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<tbody>
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<tr>
<td>Date of Birth:</td>
<td>1/1/2000</td>
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<tr>
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<td>College Fraternity Study</td>
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<td>Agent:</td>
<td>Agent, Mankato</td>
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<td>Court:</td>
<td>Blue Earth County District Court</td>
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## Readings

<table>
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<tr>
<th>TAC Level</th>
<th>IR Voltage</th>
<th>Temperature</th>
<th>Time</th>
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</table>
TAC Data over time
What variables are meaningful?
Predicted mean TAC level by Day of the Week

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

Predicted TAC level
Number of Participants with non-zero TAC by Day and Time
Predicted mean TAC among those who Drank Alcohol by Day and Time
Predicted and Peak TAC among those who Drank Alcohol by Day and Time
Things We Learned About Fraternity Drinking

• Alcohol consumption is dynamic
• Most are not drinking at any given time
• Most drinking happens Thurs - Sat
• Most drinking happens at night
• Peak TAC > 0.08 every night Mon-Sat
• TAC detectable hours after usual drinking times (morning)
Things We Learned About Collecting TAC data

- Resource intensive to collect
- Lots of data
- Interpretation is challenging
- Need to construct meaningful variables
- Current measurement methods serve judicial (not research) purposes
- TAC ≠ BAC
- Subjects were very aware of data collection (Hawthorne effect)
Commentary on TAC data collection

• Trade offs
  – Gaining objective, continuous, precise data
  – New challenges with data management, analysis, standardization, methods
  – Lag
  – Scientists cede some control to companies

• Studies may need to be small and address discrete scientific questions

• Population and policy studies may be poor matches

• May be more challenges moving to wrist worn devices

• Extensive validation will be necessary

• Resist throwing out existing measures/methods