“Sober Badge” Data, Sobriety, and Alcohol Abstinence: Measurement Characteristics and Considerations

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Background

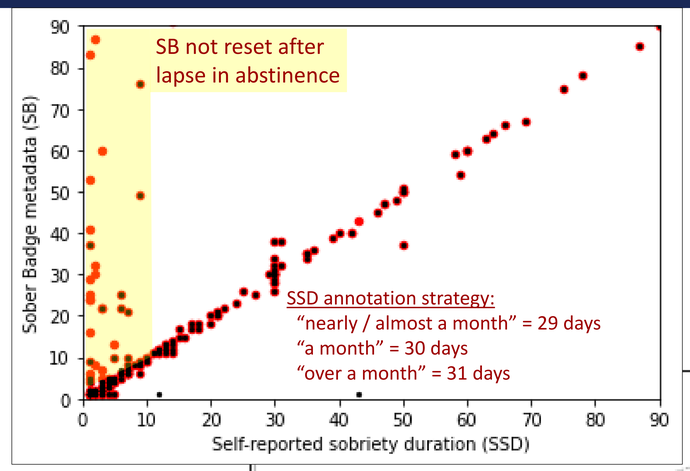
- The peer-moderated **StopDrinking** forum is a highly popular MHG on the Reddit social media platform, with more than 260,000 current subscribers and a high volume of user engagement.
- Past studies have examined patterns of sobriety via **Sober Badge (SB)** values, which forum users can optionally set to track the number of consecutive days sober. This has been considered *a priori* “gold standard” for sobriety duration, though measurement characteristics have not been critically assessed.
- This study fills a gap in the literature by carefully considering measurement properties of SB metadata.

Methods

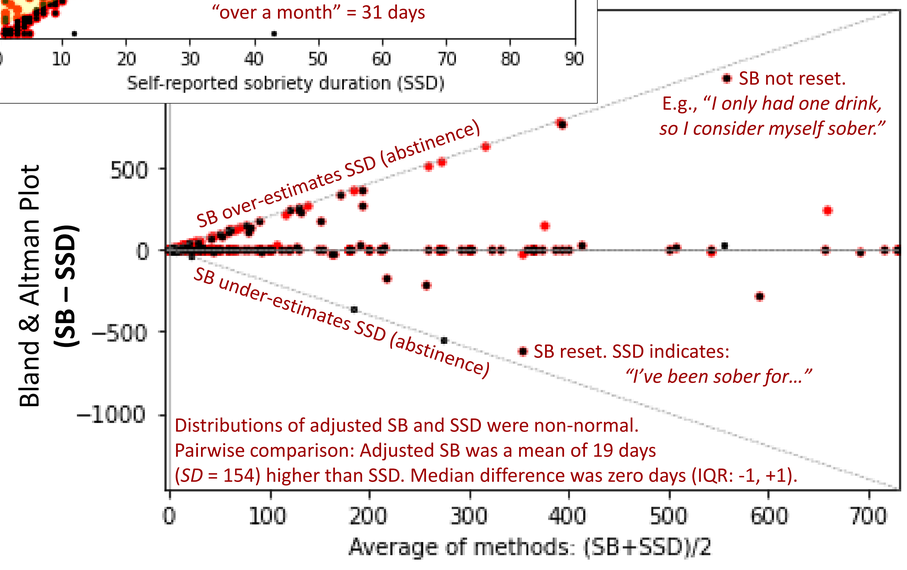
- All publicly available StopDrinking posts were obtained via the Reddit Application Programming Interface between 2018-10-01 and 2019-09-30. A random 2% subsample (*n*=1,551) was annotated.
- Annotation included content analysis and thematic synthesis of text, with attention to **self-reported sobriety duration** (**SSD**; defined as text indicating duration or lapse in *abstinence* from alcohol).
- SoberBadge (SB) metadata values were identified, where available, and compared to SSD using nonparametric approaches to examine correlation (Spearman Rho, Kendall Tau) and difference in underlying distribution (Kruskal-Wallis K). Data were grouped to determine accuracy of SB estimates.

Results

- Among annotated posts, 1107 (71.4%) included an indicator of sobriety duration via: SB only (427, 27.5%), SSD only (381, 24.6%), or both (299, 19.3%). Posts with both were analyzed further.
- In previous studies, a 24-hour adjustment window allowed for delayed SB updates. This improved correlations between SB and SSD (unadjusted: *Rho*=0.71, *Tau*=0.66; adjusted: *Rho*=0.82, *Tau*=0.77).
- Underlying distributions of adjusted SB and SSD were significantly different (*K*=63.5, *p*<0.001).
- When dichotomously grouped, adjusted SB values predicted SSD of ≥30 vs.<30 days with 90.6% accuracy. Accuracy was 96.7% for predicting ≥365 vs.<365 days. Specificity was 0.86 at 30-day and 0.98 at 365-day boundaries. Sensitivity was 0.95 at 30-day and 0.85 at 365-day boundaries.
- Thematic synthesis indicated technical difficulties (e.g., unable to reset badge while using mobile device) as well as discrepancies in defining sobriety as *abstinence* vs. *drinking without intoxication*.



Note: Red dots indicate unadjusted SB values and superimposed black dots indicate 24-hour adjusted SB values. Axis values correspond to days.



Conclusions

- Results indicate several potential measurement issues for SB data:
  - **Selection bias can be a pitfall as fewer than half of posts include SB metadata. Posts lacking SB metadata are not well researched.**
  - **SB counters are not reliably reset after a lapse in sobriety. This is sometimes due to technical difficulties related to mobile access.**
  - **SB data may not be a valid indicator of *abstinence*, as definitions of *sobriety* vary among users and may include low-risk drinking.**
- Grouped SB data (e.g., <30 days vs. ≥30 days) provide reasonable accuracy. Generalizability may be limited due to the above issues.
- Predictive modeling that includes linguistic cues or other metadata may result in enhanced indicators of both sobriety and abstinence.