# Evaluation of the Safer Bars Prevention Program for Sexual Assault

**NCT: 04141839**

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## Study Protocol and Statistical Analysis Plan

### Study Protocol

The objectives of the protocol are to conduct a cluster-randomized controlled trial with crossover, multiple sources of data, and a theory-driven analysis plan to assess the immediate and intermediate effectiveness of *Safer Bars,* a primary perpetration prevention program to train bar staff to recognize and respond to sexual aggression and its precursors among patrons. This prospective evaluation will assess individual-level outcomes, including changes in bar staff members' attitudes, perceived social norms, perceived behavioral control, behavioral intent, and subsequent bystander behavior. Bar-level outcomes will include changes in the physical bar environment and risk management safety policies. Additionally, we will use GIS mapping to identify "hot spots" of liquor licenses in areas within a 3-mile radius of the three major Arizona universities and map police dispatches for reports of sexually-violent behavior in these areas prior and subsequent to the intervention in order to assess community-level outcomes.

**Recruitment.** The study will recruit approximately 56 bars with an average of ten participants per bar for an intended sample size of 564 individual bar staff and 56 bar owners/managers. Sampling of bars will be proportional to the size of student enrollment at each of the universities. The study will sample from bars that are located within 3 miles of the university campuses, have a current liquor license to serve on-premises, and have not received the *Safer Bars* training within the past year.

Project staff will generate a list of bars in the catchment areas and will contact their owner/managers through combinations of email, phone, social media, and in-person visits. If a bar owner/manager is interested in receiving more information, staff will describe the training and study, as well as provide informational material. If a bar agrees to participate, the owner/manager will sign the Bar Agreement Form, which details the time commitment and study details. Project staff will then utilize a block randomization procedure to determine which arm (control or intervention) the bar is in and will convey this to the owner/manager as well as details about the monetary incentive ($250) available to cover some of the costs of hosting the study at their establishment. Research staff may also recruit through organizations or associations related to bartending, bartenders, or bar owner/managers within the specified catchment areas. Bars may receive *Safer Bars* training without participating in the study.

Before training session 1 (intervention group) or the information session (control group), research staff will meet with the bar owner/manager to review the consent form and screening questions. If the bar owner/manager is eligible and agrees to participate, they will provide informed consent and their contact information. At the beginning of training session 1 (intervention group) or the information session (control group), staff will discuss the study with the bar staff, provide them the opportunity to ask questions, assess eligibility, and obtain informed consent and contact information. Individuals who do not wish to participate in the study may still attend the training.

**Retention.** We will take multiple steps to retain participants throughout the project. First, we will make participation as convenient as possible by using in-person data collection for the baseline surveys and online data collection for the follow-up surveys. Second, we will give reminders to participants regarding survey completion. Finally, we will structure our payment and incentive schedule to encourage full completion.

**Study Design.** A 6-month, cluster-randomized controlled trial study design will be implemented. Bars (n = 56 bars; *n* = 564 bar staff; *n* = 56 bar owners/managers) will be randomized to receive either the *Safer Bars* bystander promotion intervention or will be assigned to a waitlist control condition in which they receive the *Safer Bars* intervention after a 3-month waiting period. Participants working at bars in the intervention group will receive two, 2.5-hour in-person intervention sessions spaced approximately two weeks apart coupled with assessments pre-intervention session 1 (baseline) and immediately post-intervention session 2. They will then complete follow-up assessments at 3 months and 6 months post-intervention. Participants working at bars assigned to the waitlist control group will complete an initial information session about the study in which they respond to the same baseline measures as the intervention group, followed by a 3-month assessment identical to that of the intervention group. Control bars will then be eligible to receive the *Safer Bars* intervention.

## Statistical Analysis Plan

### *Individual-level Analyses*

Because randomization to study arm will be at the bar level, we will use analytic techniques (generalized linear mixed models [GLMMs] and multilevel structural equation models [MSEMs]) that account for clustering of individuals nested within bars and repeated measures within individuals and allow for participant-level missing data [18,19,20]. Selection of model link functions (e.g., identity, log, logit) and error distributions (e.g., normal, Poisson, binomial) in GLMMs and MSEMs will be guided by the scale of measurement and observed distribution of the outcome measure. To test program effects on bystander behavior, we will estimate GLMMs predicting bystander behaviors at follow-up, adjusting for baseline bystander behavior as well as any relevant covariates identified in preliminary analyses. GLMMs will include random components for bar-level intercepts. To address mediation of program effects via TPB constructs, we will estimate prospective MSEMs in which the effect of study arm on bystander behavior is mediated through its effects on TPB constructs. Point estimates of indirect effects will be computed using a product-of-coefficients approach [21]. As MPlus does not produce bootstrap standard errors for indirect effects in multilevel SEMs, Bayesian credible intervals will used for inference. To address potential moderation of program effects by participant characteristics (gender identity, job position, education, personal sexual assault experiences, prior education in sexual assault prevention) and bar characteristics (policies, physical environment), we will extend above GLMMs by including Study Arm x Characteristic interaction terms. Each significant interaction will be probed to characterize the pattern of differential program effects across categories or levels of a background characteristic [22].

### *Bar-level Analyses*

Within a generalized linear modeling framework, a series of ANCOVAs will be conducted to examine the effect of intervention condition on changes in physical environment characteristics and risk management safety policies. Outcome scores at 3-month follow-up will be predicted from study arm, adjusting for baseline scores and relevant bar-level covariates. The Sidak procedure will be used to control study-wise Type 1 error inflation.

### *Community-level Analyses*

Violent crime datasets will be obtained from relevant municipal police departments via public records requests for years prior to and during the study. Maps will be generated using ArcGIS ArcMap. Violent crimes of interest will be mapped using the “Esri World Geocoder” under the “Geocode Addresses” tool and then shapefile layers will be created.

Next, spatial information of the liquor licenses for the relevant bars will be obtained from the Arizona Department of Liquor Licenses and Control (DLLC) website. Only “on-premises” liquor license addresses will be queried and mapped. Shapefile layers of bar locations will be created and added to the maps. Utilizing the “Kernel Density” tool within the “Spatial Analyst

Toolbox" via ArcMaps, bar location density will be mapped against the crime points. The results will illustrate the amount of violent crime in a specific location in relation to the density of bars for that exact location. Analyses will compare the frequency of violent crime-related police dispatches to study catchment areas before and after receiving *Safer Bars* training.

**Power Analysis**

The sample size of 564 individual bar staff (approximately 56 bars [28 bars in each study arm] x average of 10 participants per bar) affords power of .80 to detect small-to-moderate standardized between-group differences (i.e., intervention effects) on individual-level outcomes ranging from $d$ = 0.28 to 0.45, depending on an assumed intraclass correlation (ICC) of .10 for outcome scores, assumed correlations between baseline and follow-up scores ranging from $r$ = .10 to .50, and assumed ICCs for pre-post change scores ranging from .05 to .10. Adjusting for bar-level clustering, the proposed sample should afford power of .80 to detect indirect effects and small-to-moderate constituent direct effects ($d$s= 0.35-0.45 for X to M, $r2$s = .04-.09 for M to Y), assuming a 10% attrition rate. For bar-level outcomes, the proposed sample size affords power to detect large effects ($d$s = 0.66-0.76, for pre-post correlations of $r$ = .10-.50).