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Development and Implementation of *Businesses That Care* in Zacatecas, Mexico

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Abstract

As part of the Global Smart Drinking Goals campaign launched in 2018 in 6 "City Pilots" around the world, the Businesses That Care (BTC; *Empresas Que se Cuidan* in Spanish) prevention system was developed and implemented in Zacatecas, Mexico. BTC is a private business sector adaptation of the Communities That Care prevention system. BTC is designed to address underage alcohol use through a combination of a company-led prevention system, an adapted family-based prevention program with parents employed at participating companies, and environmental prevention strategies for company employees. BTC was designed to be congruent with other health and safety efforts in the region (e.g., media campaign, road safety, and school prevention efforts). This study presents the feasibility and adoption of the BTC system in Zacatecas. Process implementation measures indicated successful participant recruitment, retention, and adherence to intervention protocols. The first 4 stages of BTC implementation were completed within 14 months, with Stage 5 being interrupted by the COVID-19 pandemic. BTC Prevention Committee members, made up of employees from BTC participating companies, received 9 out of 10 BTC trainings/workshops during this time. Results provide evidence of the acceptability and feasibility for private companies to implement a *prevention system* approach for reducing youth alcohol use.

Keywords Communities That Care · Prevention science · System transformation · Adaptation · Risk and protective factors

Despite being highly preventable, in 2016, alcohol use was responsible for 2.8 million deaths worldwide. This number represents around 2% of total age-standardized deaths among females, and 7% among males (Griswold et al., 2018). In that same year, Mexico became the eighth-ranked country in the world in terms of deaths attributable to alcohol use (IHME, 2018). In a recent Mexican national survey, 77.3% of adults and 39.8% of youth 15 to 19 years of age reported lifetime alcohol use (Villatoro-Velázquez et al., 2017). In light of its high prevalence of underage drinking and high mortality rates attributed to alcohol use (IHME, 2018; Paschall et al., 2018), the State of Zacatecas in Mexico has become an exemplar of the need for place-based preventive intervention.

In response to this need, the AB InBev Foundation, as part of the Global Smart Drinking Goals campaign, sought to develop and implement a community-based prevention initiative to address alcohol use and misuse in the Zacatecas area, called the "Zacatecas City Pilot." After a review of existing prevention programs to reduce youth alcohol use and systems to implement them, the Communities That Care (CTC) prevention system (Fagan et al., 2019; Haggerty & Shapiro, 2013) was selected as the model to follow. The rationale for selecting the CTC model was based on (a) evidence of effects in reducing or sustaining reductions in youth alcohol use (Chilenski et al., 2019; Feinberg et al., 2007; Hawkins et al., 2009, 2012, 2014; Toumbourou et al., 2019); (b) being listed on

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the Blueprints for Healthy Youth Development registry as a "promising" intervention; (c) having training materials, survey questionnaires, and implementation monitoring tools in Spanish; (d) availability and willingness of CTC developers, and Spanish-language training and technical assistance; and (e) having several models of CTC implementation from other countries to follow (e.g., Australia, Canada, Chile, Colombia, Germany, Sweden, and the Netherlands), especially in Latin America (Cantizano et al., 2019; Pérez-Gómez et al., 2016).

An environmental scan and assessment of community readiness (e.g., participation, leadership, community structures, external supports) for CTC implementation, however, suggested that some structural adaptations to the original CTC model were needed.[1] Given the modernity, interest, and relative importance of the private sector in Zacatecas, we created *Businesses That Care* (BTC), redefining the "community" as a network of interested private companies that would coordinate activities and share resources for the planning, implementation, and internal assessment of science-based preventive interventions to company employees and their children. The focus on the business community as the mechanism for the delivery of prevention services stemmed from the notion that private businesses can be at an entirely different level of readiness to embark on public health system transformation due to their need for being flexible and staying competitive in the marketplace. As Stith et al. (2006) note, community readiness has its roots in business management where a "climate for the implementation of a given innovation refers to targeted employees' shared summary perceptions of the extent to which their use of a specific innovation is rewarded, supported, and expected with their organization" (Klein & Sorra, 1996). Thus, the private sector in Zacatecas was theorized to be at a more advanced stage of readiness for adopting a new innovation than other community sectors due to market pressures and having an existing hierarchy for organizational rewards, support, and expectations.

Our hypothesis was that the private business sector in Zacatecas would act as a viable driver for the implementation of evidence-based prevention programs for youth alcohol use, especially in light of the large variability in levels of perceived readiness across community sectors in Zacatecas. Although Zacatecas had several active prevention programs in place, none of these targeted risk or protective factors for youth alcohol use, and none had been evaluated for efficacy on youth alcohol-related outcomes. Moreover, the interest expressed by local leaders and stakeholders in our environmental scan and readiness assessment was to take a system-based approach that would develop local capacity, be culturally appropriate, and build long-term sustainability and self-maintenance into the system from the start. It was with this backdrop of stakeholder support and lessons learned from previous CTC implementations that we began the process of developing BTC for use in Zacatecas. The purpose of this study is to describe the development and process of implementation of the BTC system in Zacatecas.

[1] Supplemental information related to the assessment of community readiness can be found at https://www.empresasquesecuidan.org/documentos.

Methods

Setting

Zacatecas (population 146,147), and its adjoining sister city (Guadalupe population 187,918; INEGI, 2015), is located in the State of Zacatecas in the arid north-central region of Mexico. With a total population of 1,579,209 inhabitants, the State of Zacatecas is approximately half female (51%), mostly urban (59%), and relatively young (*Md* age = 26 years). Youth (ages 10 to 19) make up approximately 20% of the population. The average level of education for those 15 years and over is about 8.6 years (equivalent to an eighth-grade level). Almost half (49%) of the population are living in poverty, with 24% of the population not receiving any social services, and 9% not having sufficient income to meet basic needs. While impoverished, the local economy of Zacatecas is paradoxically vibrant. Zacatecas State has approximately 69,000 businesses, with 16,943 of them in the cities of Zacatecas and Guadalupe (142 of them with 100 or more employees; INEGI, 2015).

BTC Company Recruitment

The first step in the adaptation of CTC into BTC involved an assessment of local companies to determine interest in participating in the BTC network of companies. A list of 121 "large" companies (i.e., having at least 500 employees) located in the Zacatecas City Pilot target area was obtained from the local Zacatecas Chamber of Commerce. From this list, 46 companies were identified as being of optimal size, good standing, and relative importance in the community to be eligible for inclusion. Five companies from different sectors of the economy responded with interest and were invited formally to participate in an in-person meeting where the BTC concept was presented. Company representatives were asked to consider and sign a memorandum of understanding delineating the responsibilities of project participation and anticipated benefits to the companies. Companies were asked to (a) allow up to six employees to serve on a BTC Prevention Committee for at least 1 year, with the expectation that employees would meet on a monthly basis to receive trainings and work on one of the four Prevention Committee workgroups; (b) provide a company director to

serve on a Company Directors Board that would periodically review study protocols, BTC Prevention Committee decisions, and project implementation and outcome data; and (c) agree with study protocols, including allowing program trainers and facilitators to come to their company and deliver preventive interventions to employees at a time that was amenable to the employees' work schedules. All five of the invited companies initially joined BTC; however, one company withdrew prior to training due to having employees distributed across many different locations in the region, which made delivery of prevention services impractical logistically. The four remaining companies represented a large beer brewery, a construction industry manufacturer, a discount department store chain, and an industrial security company, representing a total of approximately 3500 employees. Subsequent interviews with directors from each of the four companies were held to understand their perceptions about youth alcohol use in Zacatecas and how to address this issue. Directors consistently informed us of the strong cultural tradition of drinking alcohol in the region, the role of the family in perpetuating intergenerational alcohol use and misuse, and the role of *machismo* in reinforcing decisions to drink alcohol. This information reaffirmed our intention to buttress BTC with evidence-based programs that included the family and sought to change social norms regarding youth alcohol use and misuse.

BTC Development and Adaptation

The next step in the BTC adaptation process was to select specific "evidence-informed" prevention programs (i.e., programs that do not yet meet the Gottfredson et al., 2015, standards of "evidence-based interventions," however, are informed in their development by extant scientific evidence) that would be implemented as part of BTC. In partnership with public health experts and based on feedback from meetings with local stakeholders and BTC company directors, we chose to implement a family-based prevention program and an environmental social norms strategy as "preselected" programs that would have the greatest impact on youth alcohol use prevention. Traditionally, the CTC process is for the local community coalition to select and implement programs in a latter phase of CTC implementation, after most trainings have been completed. Lessons learned from implementations abroad, however, demonstrated the importance of quicker adoption of programs in the community (CTC International Committee, 2018). For BTC, we considered it necessary to begin the BTC process with the selected programs built into the trainings. Our "front-loaded" approach had the benefit of (a) focusing on the specific risk and protective factors for youth alcohol use that were the targeted mediators in the programs' theory of change; (b) using specific examples of intervention fidelity indicators and monitoring processes that were consistent with the programs; and (c) shortening the timelines for BTC implementation, which had to fit within a contractually specified period of time. After a 1-year trial period with the preselected programs, the BTC Prevention Committee is expected to review the programs and determine whether they should be maintained or substituted by other programs that would be expected to meet the project goals.

The preselected programs were chosen by the local Zacatecas Steering Committee after a review of the literature for Spanish-language programs that had shown effects on youth alcohol prevention, had materials and training facilitation readily available, and were adaptable to the Zacatecas culture and environment. Only three programs met these criteria, and ultimately, the family-based *Guiding Good Choices* program (Hawkins & Catalano, 2004) was selected because an adapted version of the program was being used in Colombia, and because of its previous integration with the Communities That Care prevention system in the USA. After cultural adaptation for use in Mexico, the program was rebranded as *Tomando Buenas Decisiones* (TBD) and shared with the BTC Prevention Committee and Directors Board for final modifications and subsequent implementation as part of BTC. A second intervention, the Social Development Strategy (Haggerty & McCowan, 2018), modified and rebranded for the Zacatecas City Pilot as *Aprendiendo a dar Habilidades*, *Oportunidades*, *y Reconocimiento a los Adolescentes* (*AHORA*), was selected to provide an environmental prevention strategy to all adult employees in the participating BTC companies. The rationale for selecting *AHORA* was to provide a mechanism for breaking cultural norms regarding intragenerational and intergenerational patterns of alcohol use. The implementation plan for *AHORA* in the Zacatecas City Pilot called for volunteers from the BTC Prevention Committee to undergo specialized training in how to deliver *AHORA* in their respective companies, with companies allowing periodic group-based sessions administered to company employees.

The next steps in the adaptation of BTC encompassed the production of BTC training materials conducted in consultation with experts. These activities required the hiring of a half-time paid BTC Prevention Committee Director (in this case, a faculty member from the *Universidad Autónoma de Zacatecas* who was paid by the study), the analog to the Community Coalition Facilitator in the CTC system. Specific responsibilities of the BTC Prevention Committee Director were to (a) assist in the adaptation of BTC training materials; (b) promote communication among the BTC Prevention Committee, company directors, the local Steering Committee, and the local community; (c) coordinate trainings to the BTC Prevention Committee; and (d) assist in the coordination of prevention program delivery to company employees (*Note* that program facilitators were all former

psychology students from the *Universidad Autónoma de Zacatecas*). Additional experts included a Master Trainer in the CTC prevention system, regional consultants who worked on previous cultural adaptations of CTC, and members of the local Steering Committee who guided the adaptation process to be consistent with other local health and safety initiatives. Using materials, tools, and surveys that already were translated into Spanish from previous adaptations of CTC, we reviewed all documents for cultural and linguistic appropriateness and made necessary alterations to fit with the BTC theory of change.

Foremost among the changes made in the adaptation of CTC to BTC was the reconceptualization of the CTC Prevention Coalition to the BTC Prevention Committee.[2] In BTC, this Committee was redesigned to be made up of four workgroups that have specific tasks related to the selection, implementation, and evaluation of the preselected preventive interventions. Each workgroup was to consist of one to two members from each company, with four to eight members total. *The Implementation Workgroup* monitored implementation fidelity data and consumer satisfaction data, and communicated bottlenecks or implementation-related problems to the Prevention Committee Director and other workgroups for attention. The *Internal Communication Workgroup* was responsible for recruitment of volunteer employees and their families for program attendance in TBD and AHORA interventions. This committee was responsible for screening of workers and families with respect to program recruitment selection criteria, and interacting with program implementers and company human resources regarding scheduling of sessions. The *External Communication Workgroup* maintained communication and dissemination activities with external community organizations (e.g., local government, the media, other private businesses), and sought to find avenues for expanded delivery of the preselected interventions outside the BTC network of companies. The *Data Collection and Analysis Workgroup* was responsible for collecting risk and protective factor data from BTC company employees and analyzing the data for evaluation of current interventions and potential selection of new interventions. This workgroup also analyzed program implementation data collected by the Implementation Workgroup and relayed these findings to the Internal Communication Workgroup for dissemination. Selection of individuals for each workgroup was left to the discretion of the BTC Directors Board with the notion that that membership on the BTC Prevention Committee be considered as a reward for the employee with their time on the Committee being part of their paid work responsibilities, and completion of various trainings being considered part of their professional development.

Another important change made in the adaptation of CTC to BTC was the reorganization of trainings for the BTC Prevention Committee. Whereas the current version of CTC contains 16 specific online trainings and workshops for the local community coalition facilitated by a trained Community Coalition Facilitator, BTC was adapted to consist of 10 in-person sessions delivered to the full Prevention Committee by project investigators and the Prevention Committee Director. The correspondence of CTC to BTC trainings and workshops, by BTC stage of implementation, is shown in Table 1. Trainings and workshops were organized into one of five sequential stages (*Get Started*, *Get Organized*, *Make a Plan*, *Take Action*, and *Take Stock*) that were based on the original CTC implementation process. Three CTC workshops (Community Planning, Evaluation Planning, and Funding) were determined to not be applicable for this phase of BTC development. Because trainings and workshops tended to take longer (i.e., approximately 3 h on average, often with a 1-h "social" luncheon to increase Prevention Committee bonding) in our BTC pilot than in CTC, several workshops (e.g., Implementation Plan Workshops) had to be broken up into two sessions. Trainings and workshops were conducted at either a meeting room provided by one of the BTC companies, or a neutral location easily accessible to all BTC Prevention Committee members.

Measures[3]

Businesses That Care — Adult Survey

Measures of targeted risk and protective factors for youth alcohol use and abuse in youth, family, and community domains were obtained via administration of the BTC Adult Survey to adult employees of the four BTC companies. This survey was adapted from an abbreviated version of the CTC Youth Survey (CTC-Youth Survey; Arthur et al., 2002), which is a widely used and rigorously validated survey of youth that measures known risk and protective factors and youth health/behavior outcomes. Items in the survey were worded such that the adults were reporting on their perceptions or other community-wide adult perceptions of risk/protection. Twelve risk factors (31 items) and five protective factors (21 items) identified in the literature as being predictive of alcohol abuse and demographic characteristics of the participants were selected and adapted for inclusion on the survey. As the validity of these measures has not been examined for adults or in a Mexican context, and as cut-points

[2] Supplemental information related to the characteristics of traditional CTC coalitions and the BTC prevention committee can be found at https://www.empresasquesecuidan.org/documentos.

[3] Measurement instruments used in this study can be found at https://www.empresasquesecuidan.org/documentos.

Table 1 Mapping CTC and BTC trainings and workshops by BTC phase of implementation

CTC-plus workshop	BTC adapted workshop	BTC target audience
Stage 1: Get Started		
Strategic Consultation	Strategic Consultation	Funding agency, local community leaders, local Steering Committee
CTC Facilitator Training	Prevention Committee Director Training	Prevention Committee Director and local Steering Committee
Key Leader Orientation	Community Leader and BTC Company Directors Orientation	Community leaders and BTC company directors
Stage 2: Get Organized		
Community Board Orientation	Prevention Committee Orientation	Prevention Committee members
Social Development Strategy Workshop	*AHORA* Workshop	Prevention Committee members
Stage 3: Make a Plan		
Organizing for Phase 5	Risk and Protective Factor Data Workshop	Data Analysis and Internal Communication Workgroups
Organizing for Phase 5	Risk and Protective Factor Data Workshop	Data Analysis and Internal Communication Workgroups
Organizing for Phase 5	Action Plan Workshop	Full Prevention Committee
Community Planning Workshop	not included	not applicable
Community Assessment Workshop	Community Assessment Workshop	Full Prevention Committee
Stage 4: Take Action		
Communications Workshop	Communication Plan Workshop I	Internal and External Communication Workgroups
Communications Workshop	Communication Plan Workshop II	Internal and External Communication Workgroups
Implementation Planning Workshop	Implementation Plan Workshop I	Implementation Workgroup
Observation Workshop	Implementation Plan Workshop II	Implementation Workgroup
Program Implementation Workshop	Implementation Plan Workshop II	Implementation Workgroup
Stage 5: Take Stock		
MBT Workshop	MBT Workshop	Full Prevention Committee
Systems Change Workshop	Sustainability Plan Workshop	Full Prevention Committee

CTC Communities That Care, *BTC* Businesses That Care, *AHORA* Aprendiendo dar Habilidades, Oportunidades, y Reconocimiento a Adolescentes, *MBT* Milestones and Benchmarks Tool

in the distributions of adult survey risk/protective factors do not yet exist to determine percentages at elevated risk and suppressed protection (as they do for the CTC Youth Survey; Arthur et al., 2007), we calculated the percentages of positively or negatively endorsed items in each risk/protective factor scale (e.g., by combining *Definitely Agree* and *Somewhat Agree* response options into *Agree*, and *Somewhat Disagree* and *Definitely Disagree* into *Disagree*) to facilitate the utility of the data. A complete list of risk/protective factors and corresponding items and response options is available from the first author.

Businesses That Care — Milestones and Benchmark Tool

Implementation of the BTC system was monitored by the BTC Milestones and Benchmarks Tool. Adapted from the CTC Milestones and Benchmarks Tool (Quinby et al., 2008), the BTC version of this instrument identified 28 specific Prevention Committee goals as "milestones," which corresponded to each major stage of BTC implementation; and an average of five "benchmarks" per milestone, which corresponded to specific activities that were to be carried out within each stage to accomplish those goals. For example, a goal of BTC system development during Stage 3 is to *identify priority risk and protective factor indicators*. One activity to accomplish this goal is to *decide who will be involved in the risk and protective factor indicator prioritization process*. Throughout the process of BTC trainings and Prevention Coalition Workgroup meetings, each benchmark was coded as 1 = *activity achieved* or 0 = *activity not achieved*, and milestones were coded using a 4-point scale where 1 = *None of the milestone was met*, 2 = *Up to one-half of the milestone was met*, 3 = *Most of the milestone was met*, and 4 = *The milestone was completely met*. Thus, this instrument allowed for specific measurement of the degree to which BTC was implemented as indicated by the corresponding workshops and trainings, and gauged the degree to which specific elements of BTC implementation had been a challenge to implement. Using a 4-point scale (1 = *not at all challenging*, 2 = *somewhat challenging*, 3 = *mostly challenging*, and 4 = *very challenging*), the Prevention Committee Director rated each benchmark and added an explanatory comment if the benchmark was rated *mostly* or *very* challenging.

Businesses That Care — Prevention Committee Interview

To assess the internal functioning of the BTC Prevention Committee, we adapted a version of the CTC Community Board Interview (CBI; Shapiro et al., 2013), which we called the BTC Prevention Committee Interview. The interview was a brief (30-min) paper-and-pencil survey containing 121 items that was administered to all members of the committee after completion of Stage 4. Principal constructs measured in the interview included (a) Committee Efficacy (six items), (b) Communication (seven items), (c) Committee Capacity (three items), (d) Committee Cohesion (four items), (e) BTC Support (four items), and (f) BTC Barriers (six items) (Foster-Fishman et al., 2001; Granner & Sharpe, 2004; Zakocs & Edwards, 2006). Open-ended questions were included to allow for feedback from Prevention Committee members to the Director and BTC training staff.

Procedures

The adult survey was administered to a convenience sample of 100 adult workers in each company (time constraints limited the collection of data from a larger sample) immediately prior to the BTC Risk and Protective Factor Data Workshop (BTC Stage 3: *Make a Plan*). The procedure for administering the adult survey was for volunteers from each company, under the guidance of a BTC Internal Communications Workgroup or Data Collection and Analysis Workgroup member, to distribute the paper-and-pencil surveys to no more than 100 employees at company meetings or gatherings, in company breakrooms and food lounges, or at entries and exits to the companies. One hundred and seventy-five employees returned a completed survey to the data collection volunteers, for a 43.8% completion rate. Informed consent forms were included with all surveys. The Data Collection and Analysis Workgroup analyzed and forwarded the information to the Internal and External Communications Workgroups for dissemination. During the Action Plan Workshop; the Prevention Committee reviewed the information and prioritized specific risk/protective factors, selecting specific target indicators from each prioritized risk/protective factor for evaluation.

The BTC Milestones and Benchmarks Tool was completed by the Prevention Committee Director in consultation with Prevention Committee members and project investigators, and was updated after every meeting of the committee or a workgroup. To ensure BTC system implementation fidelity, the CTC Master Trainer reviewed progress with the Prevention Committee Director and project investigators and offered consultation on the implementation protocol. The anonymous paper-and-pencil surveys were distributed and collected by the BTC Prevention Committee Director at the end of the final BTC training in Stage 4. No specific statistical tests were planned for the survey data collected in this study; however, repeated administrations of these instruments are intended to be conducted to determine trends over time and to allow for comparisons in the implementation of other CTC-based prevention systems.

Participants

The 175 respondents to the adult survey were predominantly female (61.1%) and with children (85.1%; number of children: $M = 2.2$, SD 1.3). Respondents were 38.5 years of age on average ($SD = 10.8$) and averaged 14.5 years living in the community ($SD = 17.7$). Approximately half (51.6%) did not graduate from high school, with an additional 12.4% completing high school, 22.9% having a bachelor's degree, and 13.1% having a master's degree as their highest level of education. Adult survey respondents were approximately evenly spread across the four companies (Company A: 26.3%, Company B: 22.9%, Company C. 27.4%, and Company D., 23.4%).

All 27 BTC Prevention Committee members completed the BTC Prevention Committee Interview. Committee members were predominantly male (66.7%), resided in Guadalupe (66.7%) or Zacatecas (25.0%), worked for an average of 6.8 years at their respective companies, and lived in their community for at least 10 years (91.7%). The average age of the members was 34 years. The majority of members tended to be from "white collar" positions in the company as opposed to "blue "collar" positions in the company. Over half (58.3%) of respondents had been a part of the BTC Prevention Committee for at least 7 of the 14 months of BTC trainings, with the remainder being new recruits (1 to 6 months duration) to the committee.

Results

Prioritized Risk and Protective Factors and Targeted Indicators[4]

From the 12 risk factors and five protective factor scales on the adult survey, the Prevention Committee collected information from two risk factors (i.e., 13 indicators) and three protective factors (i.e., 14 indicators). The Committee then selected eight indicators as specific targets for change. Indicators were selected based on (a) reported prevalence, (b) areas that they perceived to be in greatest need for attention, and (c) perceived feasibility to show a significant change in 1 year. Table 2 shows the percentages of affirmative responses by

[4] Data visualizations (i.e., charts) for these results can be seen at https://www.empresasquesecuidan.org/documentos.

Table 2 Prioritized risk and protective factors and target indicators by the BTC Prevention Committee

Indicator	Observed percentage	Target percentage (range)	Associated intervention
Risk factor: norms regarding youth alcohol use			
The majority of adults in their community believe that it is *not wrong* for underage youth drink alcohol.[1]	25.1	18.8 (16.5 –21.0)	TBD
There is only a *slight harm* or *no harm* (physical or other) if youth in their community drink one or two alcoholic drinks per month.[1]	15.6	14.4 (9.5–13.3)	TBD
It is okay for parents to buy alcohol for their underage children	5.5	na	TBD
Not in favor of raising the legal drinking age from 18 to 21	70.5	na	None
Risk factor: perceptions of alcohol use in the family			
Have ever bought alcohol for a minor.[1]	19.2	14.3 (13.4–15.2)	TBD
In the last year, two or more friends of son/daughter tried alcohol without their parents knowing about it.[1]	28.3	22.2 (20.2–24.3)	TBD
It is bad that one of their own children drink alcohol regularly (i.e., once or twice a month)	14.2	na	TBD
Protective factor: prosocial activities in the community			
Community *definitely* has sport activities available for their youth.[1]	22.0	20.4 (24.1–36.6)	AHORA
Community *definitely* has religious activities available for their youth	33.7	na	AHORA
Community *definitely* has other voluntary activities available for their youth	7.3	na	AHORA
Protective factor: recognition for prosocial participation in the community			
People in their community *definitely* motivate youth to give the best of themselves.[1]	29.6	36.3 (35.1–37.1)	AHORA
People in their community that *definitely* feel proud when youth do something well	34.7	na	AHORA
People in their community *definitely* notice when youth do something well and let them know it	12.6	na	AHORA
Protective factor: opportunities for prosocial interaction in the family			
If a son or daughter had a personal problem, they *definitely* could ask for help from one of their parents.[1]	63.4	75.2 (72.5–78.0)	TBD and AHORA
Parents *definitely* consult with their sons/daughters when a family decision would affect them	68.5		TBD and AHORA
Parents *definitely* give their sons/daughters opportunities to do fun things with them.[1]	66.2	78.5 (75.8–81.2)	TBD and AHORA

TBD Tomando Buenas Decisiones, *AHORA* Aprendiendo dar Habilidades, Oportunidades, y Reconocimiento a Adolescentes, *na* not applicable (item not selected as a target for change)

[1]Targeted indicator

respondents for each prioritized risk and protective factor item, the targeted indicators, and targeted indicator goals (and range of targeted indicator goals) for 1-year post program implementation. For example, 25.5% of surveyed workers responded that they thought it was not wrong that underage youth drink alcohol. Through the administration of the TBD program, the Prevention Committee determined a reasonable target of 18.8% (a reduction of 25.1%) for affirmation of this belief. The 18.8% target value represented the average across all 27 Prevention Committee members' individual target values for that indicator, which ranged from 16.5 to 21.0%. Similar targets for other indicators were observed, ranging from a low average percentage change of 7.3% for *Community definitely has sport activities available for their youth* to a high average percentage change of 25.5% for *Respondent has ever bought alcohol for a minor*.

BTC System Implementation

All trainings and workshops of the first four stages of BTC implementation were completed in 14 months. Stages 1 and 2 (*Get Started* and *Get Organized*, respectively) were both achieved in a period of 3 months each, Stage 3 *(Make a Plan*) was implemented in 2 months, and Stage 4 *(Take Action*) took 6 months to complete. BTC Milestones and Benchmarks ratings, completed by the BTC Prevention Committee Director and project investigators, indicated high levels of fidelity to BTC implementation protocols. For example, the percentages of *completely met* or *mostly met* BTC benchmarks were 100%, 97.1%, 95.5%, and 95.4% for Stages 1 through 4, respectively. Most notably, as part of Stage 4, the *Tomando Buenas Decisiones* program was delivered to

257 families across 4 cohorts in a period of 6 months, with a subsequent pivot to online delivery of the program to an additional 63 families upon introduction of the COVID-19 pandemic in Zacatecas.

Most benchmarks were rated as *mostly challenging* or *very challenging*, with 40.5%, 69.1%, 71.6%, and 74.1% of benchmarks meeting these criteria for Stages 1 through 4, respectively. Stage 5 (*Take Stock*), which is currently in progress, achieved 72.4% of all benchmark activities, with 74.1% of benchmarks having been indicated as a challenge. Principal challenges to BTC implementation resided in the different work schedules of the Prevention Committee members, which posed a barrier to attending the preselected prevention programs and availability of fidelity observers to monitor program implementation. Additional significant challenges were noted in the Communication and Program Implementation workshops where a lack of time was reported by some Workgroup leaders who were overwhelmed with multiple tasks, which led to workshops having to be broken into two parts, with a resulting loss of continuity in workshop lessons. Finally, the appearance of the COVID-19 pandemic in Mexico caused an interruption in scheduled activities, which placed the Sustainability Plan Workshop on hold until a future date.

BTC Prevention Committee Functioning[5]

Committee Efficacy. Among the 27 BTC Prevention Committee members, half (50.0%) reported spending about 1 to 4 h per week and 37.5% reported spending less than 1 h per week, on average, in meetings related to BTC activities. A small percentage of members said that the BTC system was *a little difficult* (8.3%) or *very difficult* (8.3%) to use, with the remainder (83.4%) saying that the BTC system was easy to use. Members reported that they were *somewhat clear* (45.5%) or *very clear* (54.5%) in understanding their roles on the committee, and most (83.3%) said that they understood all aspects of BTC *somewhat well* (50.0%) or *very well* (33.3%). Almost all (91.7%) members said that the benefits of BTC outweighed the costs of the system. A quarter of members (25.0%) said that BTC had interfered with their work responsibilities *very much*, 33.3% said it had interfered *somewhat*, and 41.7% said that it had interfered *a little*. All committee members reported that they worked *somewhat* (54.5%) or *very* (45.5%) hard on BTC activities, and all reported that they benefitted *very much* (67.0%) or *somewhat* (33.0%) from learning new skills through BTC trainings and workshops.

[5] Data visualizations (i.e., charts) for these results can be seen at https://www.empresasquesecuidan.org/documentos.

Communication. Two thirds (66.7%) of members said that BTC system improved communication and collaboration within their company. Committee members reported that the communication among the members of the Prevention Committee was *somewhat productive* (41.7%) or *very productive* (41.7%). Similarly, members reported that the communication between the Prevention Committee Director and the Committee was *somewhat productive* (36.4%) or *very productive* (45.5%), and that communication between investigators and the Prevention Committee was *somewhat productive* (27.3%) or *very productive* (54.5%).

Cohesion. All Committee members *very much agreed* (63.6%) or *somewhat agreed* (36.4%) that there was a sense of unity and cohesion in the Prevention Committee. All committee members felt *very* involved (75.0%) or *moderately* involved (25.0%) in BTC activities. Conversely, 40% of members were *a little* (30.0%) or *very much* (10.0%) in agreement that there was not a group spirit among the members of the Prevention Committee. Getting members of the Prevention Committee to commit to BTC activities was considered to be a *small problem* by 25.0% of the committee, a *moderate problem* by 16.7% of the committee, and a *large program* by 8.3% of the committee. Half of the sample (50.0%) was *a little* (40.0%) or *very much* (10.0%) in agreement that it was difficult to develop a sense of trust among Committee members. A quarter of members (25.0%) noted a *small* degree of tension on the Committee.

Capacity. As an element of committee capacity, Committee members universally affirmed the leadership of the Prevention Committee to (a) meet the challenges posed in the BTC system (10.0% *somewhat agree* and 80.0% *very much agree*), (b) maintain control of the BTC meetings (27.3% *somewhat agree* and 72.7% *very much agree*), (c) resolve conflicts in the Committee (9.1% somewhat agree and 90.9% very much agree), and (d) mobilize resources to advance the BTC mission (36.4% *somewhat agree* and 63.6% *very much agree*). However, 20.0% said that the Prevention Committee in general had difficulty resolving conflicts within the committee. A third of members felt that the membership of the Prevention Coalitions was *somewhat* (25.0%) or *very* (8.3%) unstable due to member turnover, and 16.6% of members thought that the new members were not sufficiently trained. All members reported that the BTC Prevention Committee was organized and efficient (9.1% *somewhat in agreement* and 90.9% *very much in agreement*); however, 27.3% of members reported that *a little time* (9.1%) or *a lot of time* (18.2%) was wasted due to inefficiencies.

Support. Most committee members thought that (a) their company was *somewhat* (16.7%) or *very much* (58.3%) aware of BTC activities, (b) their company *somewhat* (18.2%) or

very much (63.6%) supported BTC activities, and (c) directors in their company *somewhat* (25.0%) or *very much* (37.5%) supported BTC activities. All employees (100%) reported that their companies were *somewhat* (45.5%) or *very much* (54.5%) receptive to the BTC action plan developed by the committee, and that that they felt that the BTC system was *somewhat* (36.4%) or *very much* (63.6%) addressing important concerns within their company.

Barriers. Key barriers to the BTC system reported by Prevention Committee members were (a) recruiting and maintaining high-quality personnel for the Prevention Committee (41.7% a *small problem*, 16.7% a *moderate problem*, and 25.0% a *large problem*), (b) obtaining support by community leaders outside the BTC Prevention Committee (20.0% a *small problem*, 20.0% a *moderate problem*, and 20.0% a *large problem*), (c) reaching targeted groups with BTC programs (45.5% a *small problem*, 45.5% a *moderate problem*, and 0.0% a *large problem*), and (d) getting families to attend BTC programs (44.4% a *small problem*, 22.2% a *moderate problem*, and 22.3% a *large problem*).

Discussion

The development and implementation of the BTC prevention system as part of the Zacatecas City Pilot represents an innovative approach to delivering preventive interventions for youth alcohol use and abuse. As part of the place-based Zacatecas City Pilot, BTC represents a public–private-academic partnership among the "community," academic institutions, and a private foundation, with support from a hemispheric technical assistance, training, and research center. Results of our pilot BTC development and implementation study show promise of this approach as a viable prevention system for use in communities that may not have the requisite capacity or readiness for broad prevention initiatives like the Zacatecas City Pilot. Similar to the process of community mobilization and program delivery articulated in the CTC prevention system, BTC in Zacatecas was successful in recruiting a network of private businesses to support a prevention committee (analogous to the CTC prevention coalition) in delivering (almost) all trainings and workshops to the BTC Prevention Committee and related groups, in identifying salient risk and protective factor indicators for prevention planning and evaluation, and in meeting desired levels of system implementation and committee functioning—all of which are requites for the long-term sustainability of the system.

Although we consider the BTC Zacatecas pilot implementation to be successful, several pre-implementation and in-process adaptations were needed. Pre-implementation adaptations centered on the particular corporate cultures of the workplace in the general private sector, and in the four specific BTC participating companies. In a general sense, a corporation-led prevention committee—already familiar with a hierarchical structure, with designated leaders, goal-driven actions, and structured recognition for achievements—would not be expected to operate like a volunteer community health coalition. Rather, the expectation was that the BTC Prevention Committee would evolve to emulate the structure of the participating companies, with attention to democratic decision making to foster within- and between-company collaboration.

An additional important element of BTC development and implementation was the growing role of the Universidad Autónoma de Zacatecas as a local scientific partner and counterbalance to participating BTC companies. Instead of a process of prevention science knowledge transfer taking a person-mediated path through a lone Prevention Committee Director, the BTC process of system transformation was able to use the University as an institutional support mechanism with enhanced capacity, and notoriety, and as a potential conservator for sustained use of BTC in Zacatecas (e.g., providing continued funding for the Prevention Committee Director and providing students with opportunities to act as program facilitators and implementation fidelity observers).

In a specific sense, the four participating BTC companies in the Zacatecas City Pilot were already aware of youth alcohol use as a pressing social problem (50.3% of adult survey respondents thought that underage alcohol use was a *large* problem) and were already sensitized to youth alcohol use/misuse prevention as a necessary part of their corporate social responsibility. Having a network of four different local companies whose employees work and live in the target community provided a check on the motives of larger "parent" corporations about any conflicts of interest or disingenuity in corporate initiatives (perceived or real). Although a friendly competitiveness among companies prompted them to achieve their within-company goals (e.g., number of families recruited to participate in the programs), the participating BTC companies were at different levels of power and wealth in the Zacatecas business community, and inter-company differences had to be balanced with an "all-for-one" philosophy of collective efficacy. Results from the Prevention Committee Interview survey, while generally positive, indicated that over half of the respondents reported some degree of interference with their work. This potential conflict between employees' work obligations and participation in BTC activities informed us of the need for balancing corporate and social needs, lest this tension negatively affect BTC committee functioning (e.g., member turnover) and sustainability. The "friendly competitiveness" among companies also could have been a source of coercion for employee program participation (i.e., program facilitators regularly reported program recruitment and attendance

rates to the Prevention Committee Director and Implementation Workgroup), which necessitated a delicate balance between pressures to obtain sufficient program exposure in the BTC community and protection of employees' rights to decline program participation without employment-related consequence.

The development and implementation of BTC in Zacatecas placed an emphasis on the linguistic and cultural norms of the local area. Despite our efforts to use a version of Spanish that was as universal as possible, certain colloquial phrases and local examples carried more weight with our target populations than others. Other developments related to the process of knowledge transfer and social cohesion, where additional checks for participant understanding and feedback needed to be built into the trainings more than anticipated, and where group activities often revolved around breaks in between training sessions, thus, prolonging the time needed for completion of training goals. In fact, the 14 months it took to get through Stage 4 of BTC implementation was designed originally (somewhat optimistically) to take only 12 months. By comparison, however, it took the original version of the CTC prevention system, with only six trainings, 18 months to complete the first four stages of implementation (Quinby et al., 2008).

We note that there are several limitations to this study. As a pilot developmental implementation study, the ability to generalize our findings to other sites is limited. BTC in the Zacatecas City Pilot was built for and with a specific target population in a specific geographic area. BTC benefited from a strong funding organization, a supportive local Steering Committee, a partnership with the local University, and inclusion of companies that were eager to participate. Nonetheless, we believe that it would be possible to replicate these conditions in other locations, although careful consideration would have to be given in order to find the right community size and balance of participating companies. Another important limitation is in the use of risk and protective factor measures that have not yet been validated using adult respondents. This limitation required us to use items as indicators of risk and protection, which worked well in our study with regard to practicality; however, single items as indicators of risk and protection are more likely to capture error variance than validated scales. Also, our sample of adult respondents represented a small percentage of the overall population of employees in the participating BTC companies and may not be representative of BTC Prevention Committee members, the overall population of BTC employees, nor the general population of adults in the area. Moreover, adult perceptions of community risk and protection may not be the same as youth perceptions. On the other hand, we note that BTC in Zacatecas focused on one single youth outcome—alcohol use and misuse—with well-documented and validated risk/protective factors that served as the targets of the preselected interventions chosen in this study. Use of BTC to address a broader set of youth outcomes, such as is the case with CTC, would require a broader set of validated risk/protective factor measures. We leave the cross-informant and cross-national validation of these measures as important areas for future prevention science research.

Although results of this study support the hypothesis that the private business sector in Zacatecas could act as a viable driver for the implementation of evidence-based prevention programs for youth alcohol use and misuse, we are aware that our examination of BTC in this study only examined "upstream" system-level processes that are necessary, but not sufficient, elements of the overall BTC theory of change (i.e., BTC recruitment of companies, formation and functioning of a BTC Prevention Committee, implementation of BTC trainings and activities, and targeted specific indicators for prevention planning and evaluation). Program-level (e.g., program exposure and engagement), family-level (e.g., family management, conflict resolution, and clear standards for behavior), and youth-level (incidence and prevalence of alcohol use) outcome data are currently being collected and are pending analysis.

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Declarations

Ethical Approval This study was approved by the State Council of Bioethics of Zacatecas and the University of Miami's Institutional Review Board. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Signed informed consent was obtained from all individual participants included in the study.

Conflict of Interest Dr. Eric C. Brown is a member of the AB InBev Foundation Scientific Partners Task Force and was consultant for the Foundation on underage drinking prevention during 2018. Other authors declare no conflict of interest.

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