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Alcohol and Drug Abuse Division

Testing the Social Norms Model to Reduce High Risk College Drinking 1999 – 2002 Final Report

Part II - Research Report

Prepared by the Alcohol and Drug Abuse Division,
Colorado Department of Human Services, BACCHUS & GAMMA
Peer Education Network and the University of Denver
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A. PROJECT ABSTRACT

The Alcohol and Drug Abuse Division (ADAD), Colorado Department of Human Services conducted a three-year generalization study, "Testing the Social Norms Model to Reduce High Risk College Drinking," in collaboration with the University of Denver (DU) and the BACCHUS & GAMMA Peer Education Network. This study targeted all undergraduate students at DU, a private, co-educational, urban liberal arts university with an undergraduate enrollment of 3,800. The Colorado College (CC) in Colorado Springs, Colorado, served as the comparison site for this evaluation.

Binge drinking has been labeled the number one public health hazard and a primary source of preventable morbidity and mortality among college students (Wechsler et al., 1995). A significant number of college students report binge drinking, defined as having at least five drinks in one sitting for males and four for females. College students drink more when they perceive that their peers are drinking more (Goodwin, 1989). At the same time, many students have distorted perceptions of campus alcohol use.

The selected prevention intervention model (termed the social influence, social norms, social marketing, normative influence, or proactive model) (Berkowitz, 1997, 1998) is an environmental approach that focuses on correcting students' misperceptions of college norms related to alcohol consumption through use of a mass media campaign. The implementation steps are based on Linkenbach and D'Atrie's *7-Step Montana Model on Social Norms Marketing* (1999): Planning and Environmental Advocacy; Baseline Data; Message Development; Market Plan; Pilot Test & Refine Materials; Implement the Campaign; and Evaluation.

The project involved a quasi-experimental design outcome study to: 1) determine the effectiveness of the social norms model in preventing, delaying, and/or reducing binge drinking among DU undergraduate students as compared with students at CC; and 2) measure and document reductions in alcohol abuse and associated problems at the intervention site as compared with the comparison site.

The evaluation involved the ongoing collection of quantitative data, which functioned as both process and outcome data, through administration of the *Core Alcohol and Drug Survey* and a Supplemental Survey that measured dosage and believability. Subsequently these data were used to construct specific intervention messages to design an effective social marketing campaign. Data were collected over a three-year period from DU and CC. At DU the evaluator used a cluster sampling procedure to collect first-year baseline data from 439 DU students in 25 classrooms and follow-up data from 434 and 421 students in years 02 and 03 of the intervention. At CC, 220, 298, and 131 questionnaires were collected using a similar sampling procedure over the respective years.

Comparisons across the three years of data are presented. T test comparisons and regression analyses within the intervention site and across intervention and comparison sites were conducted. Outcome data indicate that there were moderate changes in drinking at the intervention site after the implementation of the intervention. While there was little demonstrated change in the general population of the intervention site, there were significant differences over the three years reported for women. Women at the intervention site reported a

reduction in the frequency of alcohol use. Also, there were consistent differences between the intervention and comparison sites with regards to the frequency and quantity of alcohol consumption. Students at the comparison site significantly increased their use of alcohol over the three years in comparison to DU students. Also, students at the comparison site indicated experiencing a higher rate of problems associated with alcohol use. In addition, students at the intervention site reported significant reductions in the perceptions of alcohol use on campus.

Data on dosage and implementation are also reported. Dosage was measured through the use of a supplemental survey developed in Year 02 to measure degree of message saturation as well as message believability. Comparisons between Year 02 and Year 03 indicate a significant increase in the believability of normative messages disseminated throughout the campus. Finally, the fidelity of the intervention was assessed and was found to achieve a high compliance rate with the social norms model utilized in this project.

B. OVERVIEW OF THE INTERVENTION

A statement of the problem:

High risk drinking (binging) among college students persists despite widespread efforts to implement prevention intervention programs at both the college and community levels. It has been labeled the number one public health hazard and a primary source of preventable morbidity and mortality among college students (Wechsler et al., 1995). In addition to serious injuries and death in accidents related to drinking and driving, binge drinkers are at risk for date rape, sexually transmitted diseases, HIV disease, and unwanted pregnancy (Martin& Hoffman, 1993). A small percentage of college binge drinkers may be at risk for problem alcohol use later in life, especially those who developed a psychological dependence on alcohol as a coping mechanism (Berkowitz & Perkins, 1986).

Despite laws prohibiting underage drinking, 88 percent of college students report having used alcohol (Johnston et al., 1997). A significant number of college students report binge drinking, defined as having at least five drinks in one sitting for males and four drinks for females. The Harvard School of Public Health College Alcohol Study revealed that binge drinking changed very little among the 130 participating colleges between 1993 and 1997. In 1997, 42.7% of college students reported binge drinking during the previous two weeks, compared with 44% in 1993 (Wechsler at al, 1998). In Colorado, the percentages ranged from 58% at the University of Colorado/Boulder (Curtin, 1998), to 39% at the University of Northern Colorado (University of Northern Colorado, 1998).

Surveys conducted among college students have identified the demographics related to high risk drinking. Wechsler et al. (1998) found highest binge rates among males (48.1%), whites (46.8%), those under age 24 (45.5%), and those who live in fraternity or sorority houses (81.1%). Across grade levels, those reporting binge drinking comprised 43.2% of freshmen, 45.6% of sophomores, 44.2% of juniors, and 41.3% of seniors. The Harvard School of Public Health College Alcohol Study noted few changes between 1993 and 1997 (Wechsler et al, 1998).

The Alcohol and Drug Abuse Division (ADAD) initiated this project in recognition of the fact that on Colorado's college campuses the high-risk drinking problem has not been sufficiently addressed. The University of Denver (DU), an urban liberal arts college with an enrollment of more than 8,700 students in its undergraduate, graduate, and professional programs, agreed to be the study site due to two factors: 1) the University's willingness to confront the issue on the DU campus and to make the necessary changes to create a positive and healthy climate; and 2) the lack of sufficient resources to address the high risk drinking behaviors on that campus (identified in 1997 by Core Survey data).

The target population for this study is all DU undergraduate students, a population known to be at high risk for binge drinking. In 1998, DU's undergraduate population totaled 3,612 of which 556 (17.3%) were ethnic minorities. Another 280 were international students. By gender, 49 percent of the undergraduates were male, 51 percent female. By residency, 41 percent of the undergraduates were residents of Colorado, 59 percent non-Colorado.

Data on Risk Factors: In 1997 the University of Denver administered the CORE Drug and Alcohol Survey to a sample (n=812) of undergraduate students. The results indicated that many of the students engaged in high risk drinking behaviors. The following are the key findings on the use of alcohol:

- 79% of the students used alcohol in the past 30 days.
- 74% of underage (younger than 21) students drink (used alcohol at least once in the past 30 days).
- 49% of students "binge" (had 5 or more drinks at a sitting in the previous 2 weeks).
- 53% reported some form of public misconduct at least once during the past year as a result of drinking or drug use.
- 42% reported some kind of serious personal problem at least once during the past year as a result of drinking or drug use.
- 95% believe the average student on campus uses alcohol once a week or more often.
- 39.7% of residence hall students had 5 or more drinks the last time they partied.
- 60.6% of athletes report drinking 5 or more drinks the last time they partied.
- 69% of fraternity members had 5 or more drinks the last time they partied.
- 44% of sorority members had 5 or more drinks the last time they partied.
- 40.9% of male students' alcohol use has increased since coming to DU.
- 39.8% of female students' alcohol use has increased since coming to DU.
- 50.5% of athletes' alcohol use has increased since coming to DU.
- 43.4% of residence hall students' alcohol use has increased since coming to DU.
- 61.1% of fraternity and sorority members' alcohol use has increased since coming to DU.

At DU, the average number of drinks consumed per week (7.1 drinks) was greater (at the 5 percent level) than among students in the reference group (5.5 drinks). The percent of students who reported having had 5 or more drinks at one sitting in the last 2 weeks (49%) at DU was greater (at the 5 percent level) than among students in the reference group (44%). In summary, the DU undergraduate student population engages in high risk drinking behaviors commonly found on college campuses throughout the country. The problem cuts across all grade levels and affects both genders. At highest risk are fraternity members, athletes, and freshmen students.

The theoretical bases for affecting risk/resiliency factors and/or substance use related behavior with the targeted population:

The Alcohol and Drug Abuse Division's generalization study, "Testing the Social Norms to Reduce High Risk College Drinking," addresses the goals of the Center for Substance Abuse Prevention by: 1) determining how effective the social norms model is in preventing, delaying, and/or reducing binge drinking among undergraduate students at the University of Denver, as compared with students at Colorado College; and 2) measuring and documenting reductions in alcohol abuse and associated problems at the intervention site as compared to the comparison site.

The selected prevention intervention model, social norms marketing, is a science-based intervention that focuses on correcting students' misperceptions of the college norms related to alcohol consumption. Social norms marketing campaigns, directed at all students through widely

disseminated campus media, are categorized as universal prevention interventions and are considered an environmental prevention approach (Berkowitz 2000).

Social norms theory provides the underpinning for the social norms approach, which includes social norms marketing. Perkins and Berkowitz (1986) were the first to utilize the social norms approach to analyze student drinking behavior. They found that college students generally overestimate the permissive drinking behaviors of their peers and this misperception predicted how much individuals drank. Berkowitz and Perkins (1987) then recommended that students be given accurate information on their peers' drinking attitudes and behaviors as an intervention to reduce high risk drinking.

An increasing body of research confirms the early work of Perkins and Berkowitz establishing the relationship between perceptions of the campus norm and students' drinking behaviors. College students drink more when they perceive that their peers are drinking more (Goodwin, 1989). Actual campus norms are usually less liberal than most students' perceptions (Baer & Carney, 1993: Baer et al., 1991; Haines, 1996; Presley et al. 1995; Prentice & Miller, 1993). In his analysis of ten years of research on misperceptions of college students about campus alcohol and drug use, Perkins (1995) made the following generalizations:

1. The gap between actual and perceived norms exists regardless of the type of drug.
2. Misperceptions persist across historical cohorts and are passed on from one class to the next.
3. Similar misperceptions of peers exist in junior high and high school. Students come to college with a misperception of the campus norm, which worsens after arrival.
4. Misperceptions extend across gender, extracurricular, and housing subpopulations.
5. Misperceptions have a potentially significant impact on most students' personal AOD use.

Several colleges have successfully utilized the social norms model to reduce alcohol abuse among college students: Northern Illinois University (NIU), University of Arizona, Hobart and William Smith Colleges, and Western Washington University. At NIU, Haines (1996, 1998) implemented a campus-wide social influence campaign to reduce binge drinking in 1989. Surveys conducted at NIU in 1988 and 1989 indicated personal binge drinking rates of 43% and 45% respectively. The same surveys revealed the perceived norms for binge drinking to be 70% and 69% respectively. In 1995, six years after initiation of the Social Influence Campaign, the perception of binge drinking was 43%. The actual binge rate was 28%, which constituted a reduction of 35% in six years. During the same period, alcohol-related injuries to self declined 312% and alcohol-related injuries to others decreased by almost 54%.

Intervention Operalization: The Alcohol and Drug Abuse Division selected the social norms marketing model for our intervention, which in 1994 was initiated at the University of Arizona (UA) with Center for Substance Abuse Prevention funding. Results reported from UA and other universities citied above indicate overall reductions in campus binge drinking following the introduction of social norms marketing approaches with undergraduate populations. During the first months of the project our team consulted with Koreen Johannessen, project director for the UA social norms grant and received copies of the University of Arizona manual, "A Campus Case Study in Implementing Social Norms and Environmental Management Approaches: A Practical Guide to Alcohol Abuse Prevention" (Johannessen et al 1999).

Implementation of the intervention program has been based on the seven-step model detailed in the training manual, *Social Norms Marketing (The Montana Model)* by Dr. Jeff Linkenbach and D'Atrie (1998). Year 01 efforts focused on Steps 1-6 of this model: 1. Planning and Environmental Advocacy; 2. Baseline Data; 3. Message Development; 4. Marketing Plan; 5. Pilot Test and Refine Materials; and 6. Implementation. Years 02 and 03 follow the same steps, with the exclusion of baseline data collection. Step 7, evaluation, has been ongoing with outcome and process measures. Details of the implementation are covered in the next section.

Research Hypotheses: During the second year of the project, pre-test data was collected and compared with the baseline data collected in Year 01 against which to assess the following hypotheses:

> **Hypothesis:** The implementation of a social marketing campaign at the University of Denver will lead to a decrease in the reported rate of heavy drinking among undergraduate students when compared to students attending a comparison, non-intervention site.
>
> **Hypothesis:** The implementation of a social norms marketing campaign will lead to a more accurate perceptions of alcohol and drug use undergraduate students at the University of Denver when compared to students attending a comparison, non-intervention site.
>
> **Hypothesis:** Students who develop a more realistic perception of the normative environment at the University of Denver will experience a reduction in alcohol-related problems when compared to students attending a comparison, non-intervention site.

Table 1
PROGRAM LOGIC MODEL

Risk Factor	**Mechanism Theoretically Linking Risk Factor to Substance Use**	**Activities Designed to Ameliorate Risk/Increase Resiliency**	**Hypothesized Change Relating to Achievement of Program Objectives**	**Outcome Domain/ Sub domain**	**Measurement Used to Assess Change**
Perception of Use	Misperception of alcohol use by students leads to a false attribution of the alcohol use on campus. False perceptions of heavy use contribute to higher levels of alcohol consumption.	Efforts to correct student misperceptions by infusing the campus with reliable data regarding the actual use rates of students attending the University of Denver. Efforts include: dissemination of materials throughout the campus indicating actual as opposed to perceived levels of use.	Students whose perception of college drinking is altered through social norming will experience reductions in alcohol use.	Decrease in misperceptions.	CORE Alcohol and Drug Survey to measure perceptions as well as alcohol use, attitudes, and problems associated with use.

C. IMPLEMENTATION SUMMARY

Our project based its implementation plan on the seven steps detailed in the training manual, *Social Norms Marketing (The Montana Model)* by Linkenbach and D'Atrie (1998). The steps followed included: 1) Planning and Environmental Advocacy; 2) Baseline Data; 3) Message Development; 4) Marketing Plan; 5) Pilot Test and Refine Materials; and 6) Implementation. (The seventh step, Evaluation, is discussed in the Methodology section.) The same steps were implemented during Years 01, 02, and 03 of the grant, with the exception of the collection of baseline data (see below for explanation).

Step One - Planning and Environmental Advocacy:

Oversight Committee

In Year 01 upon award notification, the oversight committee was convened. This group consisted of the key stakeholders in alcohol and drug prevention and higher education issues in Colorado, including Project Director Melody Mock Durso from the Colorado Alcohol and Drug Abuse Division; Project Coordinator Drew Hunter and Project Associate Coordinator Cari Overton-Follett from the national organization, The BACCHUS & GAMMA Peer Education Network; Project Evaluator Robert Granfield, Ph.D., a University of Denver sociology professor with a background in alcohol and drug issues; DU Wellness Program Director Kristin Ream, as well as representatives from the Colorado Department of Transportation (CDOT) and Coors Brewing Company, all of whom participated in the planning of the project. The oversight committee met monthly throughout the first year of the grant to oversee all activities related to the project implementation and evaluation. During Year 02 of the grant, the Oversight Committee continued to meet monthly and played an important role in the direction of the campaign. In Year 03, the University of Denver Department of Wellness underwent staffing changes with the departure of Kristin Ream in November 2001, followed by the appointment of Rick Ginsberg, Ph.D. to the position of Director and assignment to the project in February 2002.

Cultivating Administrative Support

During the first year of the grant, the Oversight Committee and DU's Vice-Provost brought together key administrators and faculty from the University of Denver in order to announce the grant and provide information on the Social Norms Model. The group was not reconvened during Year 02 because the grant committee felt it would be more beneficial to reconvene them after the implementation had cycled through a full year and we had collected a second round of data. Examples of their support included: clearing the path for posting materials, speaking to campus groups, and providing the "top-down" support necessary for the success of the project.

During Year 03 of the grant, the Oversight Committee attempted to reconvene this group in order to update them on the progress of the campaign as well as to brainstorm ideas for future funding of the DU social norming effort once the grant project was finished. However, support from this level was not as significant as the committee had hoped, and we were unable to attract their attendance to another meeting. In addition, the top-down support for the staff of the Department of Wellness was no longer strong. This became evident with the elimination of one Wellness

staff position, resulting in limited staff time to continue to the project's priority status and ensure successful implementation.

The Stakeholders Committee

The Stakeholders group, formed in February of the first grant year, was created to advise the grant committee on the development of campaign materials, to help legitimize the campaign on campus, and to identify those groups or individuals on campus who might limit or strengthen the campaign. This committee, consisting of undergraduate students, graduate assistants, various student activities staff, wellness staff, residence life staff, and health/counseling center staff in addition to the project staff, was an integral part of the implementation process. During the first year of the grant, members received training on the social norms model of prevention and how they would be involved in the grant project.

Throughout the second year of the grant, most of the original members remained active in the group and many new members joined, increasing the participation of both student and staff members at Stakeholders' meetings. This increased participation in the Stakeholders group was essential to the success and believability of the campaign on campus. Through their training and participation, members gained knowledge of the actual alcohol use norms at DU, correcting their own misperceptions. At each monthly meeting (held only during the academic year), the group was given an opportunity to provide input on the development of the campaign and to present any obstacles encountered for resolution. The students, faculty, and staff involved became a central force to validate the campaign by sharing their knowledge with other students and staff as the grant campaign was implemented.

Year 02 participation by student stakeholders is demonstrated in the grid below:

Month	Total Attendees	Number of Undergrads	Percent of Undergrads	Number of Graduate Students	Percent of Graduate Students
October	7	1	14%	0	0%
November	14	2	14%	3	21%
January	15	6	40%	2	13%
February	17	5	29%	3	17%
March	10	3	30%	0	0%
April	11	2	18%	1	9%
May	22	9	41%	2	9%
August	15	2	13%	0	0%
September	14	4	29%	0	0%

Year 03 brought a number of challenges to the project and the Stakeholders committee. With the departure of Kristin Ream, momentum was lost with this group, as she had built a strong rapport with the members and continually sought out new members, especially students. With no staff permanently assigned to the project until February of 2002, the immediate reaction of stakeholders was to commit to seeing the project through the transition. However, without ample staff time and support, the momentum diminished, and the number of highly committed

Stakeholders decreased. From Year 02 to Year 03, the number of meetings declined by two (from nine to seven) and the average number of attendees decreased from 13.9 to 12.7. In addition, the number of student stakeholders, also increasing from year to year, on average, actually decreased in Year 03.

Year 03 participation by student stakeholders is demonstrated in the grid below:

Month	Total Attendees	Number of Undergrads	Percent of Undergrads	Number of Graduate Students	Percent of Graduate Students
October	**No meeting, due to late September and early November meetings.				
November	12	7	58%	0	0%
January	14	5	36%	0	0%
February	14	5	36%	1	7%
March	18	7	39%	0	0%
April	11	5	45%	0	0%
May	13	4	31%	0	0%
August	No meeting scheduled.				
September	7	1	14%	0	0%

Dosage: Student participation at the Stakeholders meetings increased from an average 2.4 students per meeting in the first year, to 3.8 students per meeting in the second year and 4.9 students in the third year.

Activities

Many of the activities achieved during years 01 and 02 apply both to environmental advocacy and implementation. While planning for the success of the program and gaining campus-wide support, participants in these activities also learned about the project and received materials to post and information to share with others. During the many meetings and presentations to various groups on campus, the social norming theory and message were disseminated broadly across campus, and, over time, many students have been able to effectively talk to other students about the campaign. In Year 03, although many of the same activities were continued, much of the activity was done on a smaller scale than in years 01 and 02. Following are some of the key activities:

Meetings with various Greek groups.

During Year 02 of the grant project, the coordinators held several meetings with various Greek groups on campus, *a targeted high-risk group in the grant for focused messages*. Outreach did not occur during Year 01, and it was clear that the Greek population had little buy-in into the campaign and that little had been done during the first year of planning to garner their support. In Year 03, several meetings were attempted with members of the Greek System, yet little to no response was received. This may have been, in part, to the lack of a familiar name and face associated with the project. The Year two meetings are described as follows:

The Pan Hellenic and Interfraternity leadership councils' representatives received a 30-minute presentation on the social norms theory in October of year 02. This interaction helped the grant team begin to gain the trust and buy-in of the Greek community. Social norms materials were distributed and all presidents were asked to display the materials in their respective houses. While the group was attentive, there was still a feeling of skepticism among the members.

Dosage: 30 minutes per student, 35 students.

Several Greek leaders attended two different planning meetings to determine the most effective means to involve Greek students in the campaign. Once the program coordinators clarified that the meeting's purpose was to help the Greeks rather than to highlight high-risk drinking in the Greek population, the tone at the meetings became very positive and collaborative. The students who attended were excited to be "part of the solution" and they offered many useful suggestions. For example, the students suggested that incorporating the URDU campaign into Greek Rush week would be a great way to influence the first-year students as they develop opinions about the meaning of "Greek Life". Also, the students explained that the Greeks want to feel included in the campaign (i.e. using models wearing Greek letters on the poster), but not singled out.

Dosage: 2 hours per student, 10 students.

During Year 03, although several attempts were made to host general meetings encouraging Greek leaders to give feedback, we received little to no response and were forced to cancel these meetings due to lack of interest. Although the University of Denver Director of Greek Life became increasingly involved with the Stakeholders committee in Year 03, he was not able to peak interest in this particular student population. This may be due, in part, to the change in the Director's job description, expanding to include various other student activity responsibilities. In response to the decreased interest in "general" Greek meetings, the URDU campaign specifically, and social norms theory in general, were infused into existing programs that Greeks were attending. During these presentations, the URDU campaign and the social norms of DU were discussed. Four of these meetings occurred during Year 03.

The Pan Hellenic leadership council representatives received a 15-minute presentation on the URDU campaign in February of Year 03. The intention of this meeting was to continue explaining the campaign to sorority members and to gain greater Greek community involvement in the project. It also served to explain how the URDU campaign could be addressed by attaching the issue, and thus the conversation generated by the campaign, to other topics of interest and concern among sorority members. Social norms materials were distributed and all Chapter Presidents were asked to display the materials in their respective houses. The group was generally attentive to the information being presented.

Dosage: 15 minutes per student, 22 students.

The Delta Gamma Sorority received a 45-minute presentation on the drinking norms of DU, stress management, the relationship between drinking and stress, and the URDU campaign in March of Year 03. This was the first attempt to discuss the URDU campaign and social norms theory within the context of other topics of interest to sorority members. The hope was to link the issue of DU drinking norms to stress reduction in order to promote a wider scope of conversation about the URDU campaign. Campaign materials were handed out and stakeholder

involvement was solicited. The presentation was generally a successful one, with students weaving together the two topics and using the information from the URDU campaign to justify and argue their points.

Dosage: 45 minutes per student, 47 students.

The Beta Theta Pi Fraternity received a 60-minute presentation on anger management and drinking, the drinking norms of DU, and the URDU campaign in March of Year 03. The presentation was geared toward explaining the drinking culture of DU by using data from the URDU project, and emphasizing responsible behavior (including anger management and group de-escalation) by connecting it to the responsible drinking behaviors that the majority of DU students were exhibiting. Campaign materials were handed out and stakeholder involvement was solicited. The presentation was highly successful, and it resulted in intense debate among fraternity members about the URDU campaign, and whether or not the data being used in the campaign materials were accurate. A large amount of skepticism was displayed at first, but many students helped explain social norms theory to skeptics, and engaged in conversation with the presenter about how the URDU campaign could increase its effectiveness.

Dosage: 60 minutes per student, 34 students.

The Gamma Phi Beta Sorority received a 45-minute presentation on eating issues, body image, and drinking in April of Year 03. The intention of the presentation was to link a frequently overlooked link between female alcohol use and body image. The presentation was successful in helping sorority students discuss eating issues and body image within the context of other social pressures at DU, such as drinking. Discussion was promoted regarding social norms theory and peer pressure, and how these issues impacted both drinking and the way in which women viewed their bodies. Parallels were discussed between sorority women's relationship with food and their relationship with alcohol. Campaign materials were handed out and stakeholder involvement was solicited.

Dosage: 45 minutes per student, 65 students

Presentations to Resident Assistants (RAs). During both Year 01 and Year 02, the RAs were given a training on alcohol use and abuse, the social norms model and the plan for its implementation on campus. Both years, campaign materials were provided for all the RAs to post on the floors they oversee. The presentation that was given in Year 01 yielded little conversation from the RAs in attendance. However, by Year 02 the campaign had become a dominating topic of the question/answer section of the presentation. While some students were outwardly critical of the campaign, many of their criticisms were answered, not by the presenters, but by other students who understood the social norms theory. In Year 03, another conversation was held with RAs regarding the URDU campaign, discussing how the social norms of DU could be infused into programming for residence halls. The RAs in attendance knew of the campaign and social norms theory, and much of the discussion centered around the students' dislike of the message ("Most DU students drink 0-5 drinks when they party") because they thought the numbers were either too low, and thus not believable, or too high, and thus counterproductive to advertise.

Dosage decreased only gradually between years 01 and 02, but dropped significantly in Year 03. The first two years, the program was included as a part of the overall training required of all RAs, which resulted in much higher attendance.

Dosage (Year 01): 30 minutes per student, 70 students in attendance
Dosage (Year 02): 60 minutes per student, 66 students in attendance
Dosage (Year 03): 45 minutes per student, 38 students.

Presentations to the student leaders of Student Orientation, Advising and Registration (SOAR). During all three years of the project, student leaders of the SOAR program (Student Orientation Advising and Registration – a program for first-year and transfer students) received a presentation on the grant process, goals, and the social norms messages. Much like the presentations given to the RAs, during Year 01 the students listened to the presentation but had few questions. Conversely, during the presentation given in Year 02 the students had many questions and comments about the campaign and the theory, and gave much good feedback regarding the campaign materials. During the presentation given in Year 03, students also provided feedback regarding campaign materials and message development.

Dosage (Year 01): 60 minutes per student, 52 students in attendance
Dosage (Year 02): 30 minutes per student, 46 students in attendance
Dosage (Year 03): 35 minutes per student, 39 students in attendance

University of Denver Community Connections (UDCC) Classes. In the last month of Year 03, several presentations were done to UDCC classes about the URDU campaign and social norms theory. UDCC classes are two-credit classes for first-year students taken during their first quarter at DU. The classes are specifically designed to address pertinent campus issues, provide information to students about resources on campus, and introduce students to staff and faculty members who can offer students engaging and interesting educational experiences. Eight, 20-minute presentations were done in such classes during the month of September in Year 03. Campaign materials were disseminated and student stakeholder involvement was solicited during these meetings.

Dosage: 20 minutes per student, 87 students total.

Step Two: Baseline Data

The baseline data, collected in February and March of 2000 during the first year, was used extensively throughout the second year to garner campus support of the campaign. Once students, faculty and staff began to understand that the campaign messages were based on data from a campus-wide survey, they were more open to learning about the campaign and the social norms theory. The baseline data was used in Year 01 (October 99 – 00) to develop the Year 02 messages that were implemented in October 2000 through May 2001. Each year of the project, data was collected and used, to create new messages or revise those used previously.

Step Three: Message Development

During Year 01 of the project, three positive social norms campaign messages were created from the baseline data collected in February and March of 2000. The messages for the first year of the

campaign, developed entirely by the students, faculty and staff on the Stakeholders committee, were based on actual, positive norms identified in the baseline data regarding student alcohol use.

In addition to creating the materials, the Stakeholders group developed a campaign theme and logo. The logo was designed to resemble a Colorado state license plate and displayed the messages "URDU" and "University of Denver." This theme stands for "You are DU." The intent of the message was to establish an inclusive feeling for the campaign, and to provide a way to link all campaign materials together. The logo was effective, in that the campaign became commonly referred to as "URDU" and will continue to be used as long as the University of Denver continues the campaign.

In May 2001, message development began for Year 02 using the new data collected in February and March of 2001. Unlike Year 01, when project coordinators developed multiple messages that were focus grouped only with the Stakeholders Committee, in the second year, staff used broader focus group feedback to develop a single message. The decision to use a single message was based on first year findings that multiple messages (four different messages were advertised in Year 01) confused the audience, and as a result, no clear message was retained. Because data results were not available until May, and the DU spring term ended in June, staff had limited time to focus group the messages and create materials to target specific populations (athletes, fraternity or sorority members, and first-year students). Therefore, fewer focus groups were conducted than were originally planned.

However, in the limited time available, the message and campaign materials were focus grouped in several different ways: paid student Stakeholders conducted focus groups in Greek houses, on residence floors, and among their classmates; the campaign materials were available on-line with an attached on-line response form, to which many students responded; and finally, the materials and message were focus grouped with the Stakeholders group itself. The focus group feedback shaped a new campaign message. The message was initially implemented at the end of Year 02 (August and September, 2001) and continued through Year 03 (October 2001 through September, 2002), as a result of the academic year overlapping the grant year. This new campaign message, refined to "Most DU students drink 5 or fewer when they party" seemed to be much more appealing and believable to students, although some still rejected it for issues of believability (either too high or too low a figure).

As we received feedback from students, it was felt that a mention of "five or fewer" meaning "zero to five" was necessary to empower abstainers and low-risk drinkers. In addition, this acted as a reminder to the heavier drinkers that most students choose to drink 0, 1, 2, 3, 4, or 5 drinks when they partied and decreased the emphasis on the "5". When new materials were developed, they were printed with the message, "Most DU Students drink 5 or fewer (that's 0-5) when they party." Additionally, in response to student requests for facts about the campaign, the message was used on an additional poster, which included statements regarding where the statistic came from (students) and that the project was grant-funded, not implemented by administration, and posed the question, "Do you know the facts?"

As planning for the 2002-2003 academic year began, we felt it important to develop a new message only if the survey data indicated that there had been a significant change. It seemed that students had started to catch on to the message, and anecdotally, that recognition of the campaign had grown. When a more comprehensive data set was received in late May, it was gleaned for any significant, positive change in either perception or behavior. While there were small changes overall, and clear change in the female population, the project team felt it would be detrimental to the future success to change the message. Therefore, "Most DU Students have 5 or fewer when they party" remained the primary message throughout Year 03 and beyond, through the fall 2002 quarter.

Step Four: Market Plan

During both Year 01 and Year 02 of the campaign, the implementation team created a marketing materials rollout plan listing all campus facilities and the number of materials needed for posting. The plan was adhered to during each posting period to ensure thorough and consistent saturation of the campus.

Additionally, during Year 01 of the project, the project coordinators solicited opinions from the Stakeholders group and SOAR leaders on how best to saturate the campus with the campaign messages. Campus representatives agreed that traditional materials, such as posters and table tents, were necessary to attain widespread saturation. In addition, less traditional marketing materials were used. These materials included static cling decals to be placed on windows and mirrors, refrigerator magnets, lanyards, visors and dry-erase markers.

As a result of such successful saturation levels in the project's first year, a similar market plan was followed for Year 02 of the grant. Posters and table tents were used as the main source of message dissemination, complimented by less traditional marketing materials to integrate the message into the campus culture. These methods included: post-it note pads, pens, granola bars, and highlighters. Additionally, project staff developed a URDU website containing campaign information, data, materials, and a feedback section. Finally, as the stakeholders' committee suggested in Year 01 of the project, in order to achieve broader saturation, advertising and student-written articles were placed in *The Clarion*, DU's student newspaper, throughout the year to promote the campaign.

During both Year 01 and Year 02, campaign coordinators & volunteers heavily saturated certain areas on campus in order to reach specified target populations. Residence halls, where most first-year students reside, and the Driscoll Center (student union) were targeted for the maximum number of materials allowed for posting. All academic buildings containing bulletin boards were saturated with posters, and academic buildings with no bulletin boards or strict posting policies were saturated with table tents and static clings. The Greek organizations received materials to post in their Greek houses as well.

In year 03, due to staffing challenges and reduced student stakeholders participation, the rollout plan previously developed was not adhered to as strictly, thus reducing message saturation across campus. Posters continued to be the primary means by which the message was disseminated,

however, at the suggestion of the new Wellness Director, no additional table tents or static cleans were developed, as they disappeared from posting areas too quickly. As was done in Year 02, a variety of materials were developed to maintain student interest and visibility of the message. These materials included: microwave popcorn for Homecoming; post-it note pads; "Five or Fewer" labels for coffee cup sleeves in the student union; postcards with zipper pulls with the "Five or fewer" message and prize coupons to reward students for wearing and knowing the message; "5 or fewer" logo printed on t-shirts and water bottles for the student spring celebration, "May Daze"; CD cases for orientation; travel mugs; key chains; and pens with a message window that changes each time the pen is clicked.

One component of the market plan that differed from Year 01 to Year 03 was the attention paid to the Greek student population. While in Year 01, the project team was unable to address the needs of the higher-risk Greek community (one of the grant's target groups to receive focused messages), in Year 02, the first year Greek students were targeted with campaign materials. This process began over the summer of 2001 when all incoming students received a mailing inviting them to participate in Greek recruitment. The mailing included a postcard that reminded the recipients that there is much more to Greek life than "partying" and it cited the "5 or fewer" message. Then, in September 2001, the first year students participating in Greek recruitment were given granola bars packaged with the social norming message.

With challenges in project staffing at DU and difficulty coordinating with Greek leaders, this group was not targeted in the same fashion in Year 03, but did remain a focus of the campaign. Each sorority and fraternity chapter received marketing materials to post in their respective houses, and several chapters were recipients of programs done by DU's Wellness staff. New to the campaign was the printing of an advertisement in a new Greek Life publication, developed by the office of Greek Life. The ad was developed to advertise student norms to potential Greek pledges, prior to their membership. Unfortunately, Greek leaders did not have as much interest in participating in Year 03, and the brainstorming meetings that were so successful in Year 02 were not held due to lack of interest.

This was one of many challenges presented in Year 03. While there were many challenges for the project overall in Year 03, perhaps most challenging was to maintain the past success of the market plan and dissemination of materials. Although in the Fall quarter of 2001 the campus remained saturated with various materials, with the loss of Kristin Ream as the Wellness Coordinator on the project in November, came a loss of knowledge from the past plan and lack of determination to maintain fidelity to the model. Although Ms. Ream provided ample documentation to ensure the program's success, with no staff from the University of Denver permanently assigned to the project until February 2002 and a lack of dedicated time to the project, the plans were not closely adhered to and the saturation levels decreased significantly from Years 01 and 02 to Year 03.

Because of the decrease in time allotted to Wellness staff on behalf of the project, a senior student stakeholder oversaw the dissemination of materials for much of the spring (2002). However, without close supervision by a person of authority, and organized communication with student stakeholders on a weekly basis, the level of message saturation decreased.

Step Five: Pilot Test & Refine Materials

Due to time limitations, during Year 01 of the project the materials were pilot-tested only with the Stakeholders Committee. While this approach allowed for faster decision-making, it did not provide the project team with sufficient student feedback to create materials to which the general student population could relate. Therefore, in Year 02 the project staff made pilot-testing a priority in materials development and refinement. In the limited time available, the message and campaign materials were focus grouped in several different ways: paid student Stakeholders conducted focus groups in Greek houses, on residence floors, and among their classmates; the campaign materials were available on-line with an attached on-line response form, to which 35 students responded; and finally, the materials and message were focus grouped with the Stakeholders group itself. While we know that 50 students gave their feedback in focus groups, many other students provided feedback in informal settings (such as at the end of presentations or just in passing on campus).

Due to the short implementation timeline for the Year 01 campaign (implementation began on September 1, 2000 and the grant year ended on September 30, 2000), anecdotal data wasn't collected from students on campus regarding the campaign's prevalence or believability. However, throughout the grant's second year, anecdotal data was collected on students' knowledge of the actual alcohol use norms among DU undergraduates, how they were made aware of the information, and why they believed/did not believe the information. This information was collected in three ways: feedback from presentations to students, paid student stakeholders administering short surveys to students on campus, and formal data collection. The formal data collection consisted of a supplemental survey included with the Year 02 Core Alcohol and Drug Survey administered in February of 2001. The supplemental survey addressed the questions of saturation and believability of the messages. In addition, the stakeholders were asked to report any reactions and discussions regarding the campaign they had had with other students and professionals.

Looking at the feedback collected, the project team and stakeholder committee decided to keep the message, "Most DU Students drink 5 or fewer when they party" as the main focus for the 2001-2002 academic year (crossing over from Fiscal Year 02 to Fiscal Year 03), with additional materials addressing issues brought up by students and members of the stakeholders committee. One such material was a poster, with just the facts: "Fact: Most DU students have 0-5 drinks when they party; Fact: This info came straight from you in February, 2001; Fact: The URDU project is a federally funded research project." The idea behind this poster was to address concerns and misperceptions regarding the campaign, such as students believing the messages were a marketing ploy by the university's public relations department. Strategies such as this, that provided the facts and attempted to correct myths surrounding the campaign, were an important piece in our overall marketing plan. In addition to this message, we continued to use "Most DU Students drink 5 or fewer when they party" and "Most DU Students drink 5 or fewer (that's 0-5) when they party" alternately on various materials to continue appealing to a broader student audience.

Moving into the 2002-2003 academic year, with the grant ending September 30, 2002, the project team and stakeholders committee agreed that the message should remain the same, as the statistics for general students had not changed significantly. However, to change the flavor of the campaign, two student stakeholders developed a new poster concept and the artwork and color scheme was integrated into a new poster for the quarter. (The exact design could not be used, as it would have been very costly to print with the number of colors and technicality of the design.) Other materials were then developed to complement the new design.

Step Six: Implement the Campaign

On September 1, 2000, the first phase of the URDU campaign was rolled out. This consisted of dissemination of posters, table tents, letters to faculty and department chairpersons, and lanyards in all student residence hall boxes. Since the grant year ended on September 30, 2000, little implementation was undertaken in Year 01.

However, during Year 02 of the grant, from October 1, 2000 until June 1, 2001 (the end of the DU academic year), the social norms campaign was continually implemented on campus. Not only were various materials posted, but the project team also worked to integrate the campaign and the social norms message into campus culture by participating in campus activities. For example, the URDU campaign-sponsored prizes were given away at the beginning of various events during Winter Carnival, DU's annual winter celebration event, and at the kick-off event for KVDU, DU's new radio station.

One of the activities that was carried out in Year 01, but was not needed again in Year 02 was a presentation by Jan Gascoigne, Ph.D., Director of Health Promotions for The BACCHUS and GAMMA Peer Education Network. Prior to the actual rollout in Year 01, the stakeholders were invited to a session on what to expect when the information was disseminated, and how to answer questions. Dr. Gascoigne spoke to the group about her experiences working with eleven different campuses implementing social norms campaigns. She suggested that most questions would be about the statistics, who had developed the materials and why the information stated how much or how often students used alcohol. This presentation was not duplicated in Year 02 because the majority of stakeholders had already received the training and we included discussion of these issues in stakeholders meetings to promote internal training by sharing experiences with the group. The ability of the Stakeholders group and other student leaders to respond to questions and discuss the campaign was a positive force across campus.

The second year of implementation began on August 31, 2001, just before the beginning of the 2001-2002 academic year. The implementation date was scheduled several days before the new first-year students arrived on campus, and one week prior to the arrival of returning students. The following individuals assisted in the rollout: a team consisting of students who lived on campus and were available before the start of classes; staff; and some members of the Stakeholders committee. These volunteers were provided with posters, table tents and static clings to place on all bulletin boards and any approved posting areas across campus. The importance of identifying these "approved posting areas" is a critical one, as campus-posting

policies can be strict, as at DU, and materials are removed promptly if posted in unapproved locations.

Implementation in Year 03 presented a greater challenge that it had in previous years, greatly due to decreased DU staff time allocated to the project. Although staff members were involved with the new student orientation program, the CD holders developed to disseminate to new students arrived after the programs they attended as a group had concluded. These items were thus disseminated at various events and at information tables on campus. Although it was planned that a new poster for this academic year would be one developed in the spring by a student stakeholder, the student who developed it did not return to campus and due to computer file conflicts, only parts of the original could be used to create a new poster, delaying printing and delivery to campus. The project team determined that posting the two posters from the Winter and Spring 2002 quarters would be the best solution to limit the loss of message saturation and campaign momentum. On September 18, 2002, at the first Stakeholders committee meeting, these materials were disseminated for posting. Shortly following this meeting, the new poster arrived and was posted across campus in the following weeks.

During Year 01 and Year 02, campaign materials were distributed during various orientation sessions. All new students are required to participate in a weeklong orientation program, SOAR (Student Orientation, Advising, and Registration). One aspect of this program is a "Life Skills" session in which many pertinent topics are covered. One of these topics is the use of alcohol on campus. During Year 01 of the campaign, approximately 900 new students participated in a Jeopardy game that consisted of questions/answers dealing with alcohol, tobacco, and other drug issues and the social norms campaign statistics. In addition, SOAR leaders were provided with the information sheets on the campaign and given sun visors with the campaign logo.

During Year 02 of the campaign, all Life Skills facilitators were made aware of the social norms campaign and all facilitators gave out granola bars bearing the "five or fewer" message during their respective Life Skills sessions. Additionally all first-year students received a new student guide/calendar containing tips regarding the DU campus and the surrounding Denver community. This guide included information about the URDU campaign and had the campaign's logo as a watermark on each page. Finally, the DU student recreation and wellness guide contained a full-page about the campaign. The latter two projects were collaborative efforts. The student guide/calendar was developed and paid for by the University of Denver's Center for Academic Resources and the Student Orientation, Advising, and Registration (SOAR) program, along with help from this grant. The recreation and wellness student guide was developed and paid for by the University of Denver's Recreation and Wellness departments.

The 2002 SOAR Life Skills program (end of Year 03), included peer theatre, in which students acted out many scenes addressing life as a college student. Issues addressed included alcohol use and abuse, sexual assault, drinking and driving, and academic integrity. Throughout the performance, the social norms were discussed, emphasizing the most DU students make healthy choices, and more specifically, that "Most DU students drink 5 or fewer when they party." Following the performance, students divided into smaller groups to attend a facilitated discussion about the program, as well as their perceptions of college life and the policies of the university.

As the campaign progressed through each year, we collected anecdotal data regarding the campaign and reinforced the social norms message through "prize patrols" on campus (student stakeholders armed with prizes who randomly asked students if they knew the social norms message). Prize patrols were not conducted in Year 01 because there was only one month of implementation time before the end of the first grant year. During Year 02 and Year 03, student stakeholders had the opportunity to give students coupons and cash ($1) if they knew the currently posted message(s).

Information sheets were another valuable tool used to promote campus norms and the project itself. They were used during all years of the project, but most heavily in Year 02. These sheets were designed to provide clear, concise details on the campaign, while correcting the misperception that most DU students drink frequently and heavily. Information sheets were designed for specific audiences (i.e. parents, SOAR staff, faculty, and students). Additionally, the information sheets provided ways in which the reader could support the social norms effort. The following products were distributed: a campaign information sheet for parents of incoming first-year students; a campaign information sheet for SOAR leaders so they could be informed about the campaign, as well as be aware of the myths that surround the campaign; and general campaign information sheets to all of the faculty and department chairpersons.

Finally, during both Year 01 and Year 02 of the campaign, faculty and Department Chairpersons received packets containing social norms information and a project overview. During Year 01, each person received a campaign information sheet and a dry erase marker, as well as a letter describing the campaign. During Year 02, faculty and department chairpersons received new packets of information each time a new campaign poster was rolled-out (this occurred three times between October 2000 and June 2001). In addition to campaign materials, for the September 2001 rollout each person received two academic articles discussing the social norms theory and how the model has been used at campuses across the country. This dissemination to faculty and administration occurred on a more limited basis in Year 03 due to transition of DU staff and the decrease in staff time allotted to the project.

At the end of Year 02 and throughout Year 02 of the project, the campus was saturated with campaign materials. As a result of the thorough posting and distribution of campaign materials, as well as presentations regarding the campaign, the population was saturated with the true norms of alcohol use among DU students that directly contradicted the misperceptions of most students, staff and faculty. Although materials were posted and presentations continued to be conducted in Year 03, this happened was on a more limited level, creating an lapse in the momentum developed in the previous years. However, in each year, significant dialogue about student alcohol use continued, which raised critical awareness of the issue and a more open atmosphere for discussion of alcohol issues. In addition, by Year 03, DU's Department of Wellness had integrated social norms and campaign statistics into most of their student presentations and became a known resource for information on this issue.

Step Seven: Evaluation
This step is covered in the Methodology section.

Conclusion

It is our hope that the University of Denver will build upon the campaign and continue to adapt it to reflect the changing student population. Many avenues have been explored to ensure the project continues. The most probable of which is integrating it into the Wellness Living and Learning Community (LLC). Students can choose to be a part of a "living and learning community," which includes a designated area in a residence hall for students with similar interests and participation in an academic course designed to further educate students on a particular area of interest. The proposal for the Wellness LLC is to include social norms as part of the first-year curriculum and create a curriculum for the second year LLC students to include the social norms campaign as a student-run project, overseen by Wellness staff.

D. METHODOLOGY

Research Design.

The principal intervention evaluated in this research involves the assessment of a social marketing campaign on college students' use of alcohol and drugs, their perceptions of alcohol and drug use by others, as well as the intervention's impact on a host of social indicators. This intervention centers on the ongoing collection of quantitative data that is used to help design an effective social marketing strategy. Because there is a strong relationship in this research project between formative and summative assessments, the evaluation utilized in this research follows the principals of action research. Action based research is a "collaborative approach to inquiry or investigation that provides people with the means to take systematic action to resolve specific problems (Stringer, 1996:15)." This orientation to research is a participative and fluid process in which the researcher acts, in part, as a resource person who is able to assist stakeholders in defining their problems and support them as they work towards effective solutions. This "bottom-up" approach to research and evaluation is consistent with the general orientation of the intervention under examination in this project. As described earlier in this report, since this social marketing campaign uses a data driven development process, data collection, analysis, and feedback must occur along the various stages of program development and implementation.

Evaluation of the social norms marketing project at the University of Denver, by necessity, employs quantitative procedures. For this project, quantitative data serve both process and outcome purposes. Since social norms theory is premised upon the misperception of local norms, data collection must be reflective of the target population in order to develop appropriate normative messages for the intervention site. Subsequently, the quantitative data collected for this evaluation will function as both process and outcome data.

1. Process Research Design.

a. Description of design and assessment procedure (methods).

Social norms theory, upon which this project is based, asserts that college students misperceive levels of alcohol and drug use on their college campus. According to the principles of a social norms intervention, as outlined earlier, the collection of quantitative data regarding actual rates of intoxicant use on campus is a critical first stage of the intervention. This data is used to construct normative messages within the specific

college environment. For social norming intervention to be effective, local quantitative data collected from the specific target population must be used to counteract prevailing misperceptions. This process data is used to develop specific intervention messages.

The process data was collected through a random sampling protocol in which questionnaires were administered to students. These questionnaires sought to ascertain information on student perceptions of use as well as the prevailing levels of alcohol and drug consumption on campus. The sampling procedure used to collect both the process and outcome data is outlined in the section on outcome research. Analysis for this section employs descriptive statistics only.

The specific hypotheses for the process evaluation are as follows:

Hypothesis 1: University of Denver students will misperceive the levels of alcohol use on campus.
Hypothesis 2: Moderate patterns of alcohol use are more pronounced at the University of Denver than are excessive patterns.
Hypothesis 3*:* Normative messages promoting moderation can be developed.
Hypothesis 4: Students will experience a high dosage of social norms messages.
Hypothesis 5: As predicted by social norms theory, student believability in the social norms messages will increase over time.
Hypothesis 6: The fidelity of the social norm intervention, based of the Montana Model, will be high.

Self-report data from the Core Survey (see below) was used to assess the validity of hypotheses 1 and 2. Hypothesis 3 was assessed by the successful development of social norms messages. Hypotheses 4 and 5 were assessed through a supplemental survey developed specifically for this project to measure dosage and believability of the social norms messages. Finally, hypothesis 6 was assessed through a fidelity instrument that was developed for this project.

b. Timetable for assessments.

The collection of process data pertaining to hypotheses 1 through 5 occurred each year in February and March at the University of Denver. Data collected through the Core Survey was be used to track perceptions, identify healthy social norms norms, and develop marketing materials. The instrument to measure hypothesis 6 was implemented during year three of the project.

c. Description of assessment tools including validity and reliability.

The primary instrument used for both process and outcome assessment is the *Core Alcohol and Drug Survey*. Because of time constraints, the *Survey of Campus Norms* used in Year 01 was dropped from the design. During Year 02 and Year 03, a supplemental survey was developed that included selected items from the Survey of Campus Norms and also included measures of dosage and message believability. A full description of these instruments is provided in the following section.

During Year 03, a new instrument, the *Social Norm Fidelity Instrument*, was developed in an attempt to assess the degree of program fidelity achieved throughout the project. The evaluator created this instrument due to the fact that no such instrument existed to assess fidelity of social norm projects. This was determined after the evaluator contacted several leaders in the field of social norming and was informed that no such instrument has been developed. Subsequently, the evaluator developed an instrument by developing items that seemed related to the various components of the theoretical model utilized in the project. The face validity of this instrument appears sound.

Once the instrument was developed, copies were distributed to each of the project staff and stakeholders. One week after the distribution of the instrument, a group meeting was held to collect fidelity data. A trained facilitator conducted the group meeting and the data collection process. The fidelity assessment meeting occurred over a two-hour time period in which compliance to the various components of the model was assessed and quantitatively measured.

2. Outcome Research Design.

a. Research Design/Research Questions/Hypotheses.

The quasi-experimental design involving pre- and post-measurements with treatment and comparison group for the outcome evaluation of this project is presented in Table 1.

Table 1: Quasi-Experimental Design

	University of Denver	*Colorado College*	*Total*
2000	*Pre-test*	*Pre-test*	
	(500)	*(500)*	*1000*
2001	*Post-test*	*Post-test*	
	(500)	*(500)*	*1000*
2002	*Post-test*	*Post-test*	
	(500)	*(500)*	*1000*

The primary focus of this outcome study is to assess the impact of the social marketing campaign on the alcohol consumption and perceptions of undergraduate students attending the University of Denver (DU). A second college, the Colorado College (CC), located in Colorado Springs, Colorado, which is approximately 70 miles south of the city of Denver, serves as the comparison site for this evaluation. This school possesses many of the same characteristics of DU. Like DU, it is a small, private college that draws most of its students from outside Colorado. The quasi-experimental design used to assess the impact of this intervention is illustrated below:

Pre	**12 Months**	**24 months**	
X --------SN----------	X ---------SN----------	X	University of Denver
(N = 439)	(N = 434)	(N = 421)	
X	X	X	Colorado College
(N = 220)	(N = 298)	(N = 130)	

The first year of the study was devoted to the development of the social norms marketing campaign specifically designed for the University of Denver. As indicated in table 1 above Year 01 was reserved for the collection of base-line data at both the intervention and comparison sites. During Year 02, post-test data was collected and compared with Year 01 baseline data. A second year of follow-up data was collected in Year 03 of the grant. The central theoretical premise associated with the social norms approach to prevention is that the perception of a permissive environment and associated alcohol use will contribute to higher levels of individual use of alcohol. Consequently, by reducing the misperceptions of excessive use, social norm theory predicts that individual alcohol use will decline.

Hypothesis 1: The implementation of a social marketing campaign at the University of Denver will lead to a decrease in the reported use of alcohol among undergraduate students when compared to students attending a comparison site.
Hypothesis 2: The implementation of a social norms marketing campaign will lead to reductions in the perception of alcohol use among undergraduate students at the University of Denver when compared to students attending a comparison site.
Hypothesis 3: Students who are exposed to social norm messages will experience a reduction in alcohol-related problems when compared to students attending a comparison site.

b. Population and Sample Strategy & Size.

Undergraduate students attending the University of Denver is the target population of the social norms project described in this report. The demographic characteristics of this target population and the sample selected for this study are contained in table 2 on the next page. (Please note that the sample totals do not include missing cases.) As this table demonstrates, the demographic distributions containing the population and sample parameters for all three years indicate a close match.

Table 2. Population and Sample Characteristics: University of Denver													
		Total Population						**Sample**					
		N			**Percent**			N			**Percent**		
Gender		1999	2000	2001	1999	2000	2001	2000	2001	2002	2000	2001	2002
	Male	1566	1645	1757	48%	48%	48%	171	195	157	45%	45%	41%
	Female	1667	1787	1890	52%	52%	52%	215	244	235	55%	55%	59%
Ethnicity													
	African Am.	83	85	87	2.7%	2.6%	2.5%	11	4	14	2.8%	1.0%	3.4%
	Amer. Indian	33	37	45	1.1%	1.1%	1.3%	3	1	4	.8%	.3%	1.0%
	Asian	171	180	186	5.4%	5.5%	5.4%	28	30	27	7.1%	7.2%	6.4%
	Hispanic	169	180	204	6.4%	5.5%	5.9%	20	23	20	5.0%	5.5%	4.8%
	White	2522	2735	2910	84%	85%	84.8%	335	335	322	84%	81.0%	79.0%

A cluster sampling protocol was used to collect data from the intervention site. Cluster sampling is a popular, efficient and valid method of collecting random samples of college students. The benefits of cluster sampling are several. Such samples are inexpensive, the primary costs being the questionnaires and self-sealing envelopes. They are quick, allowing for rapid turn-around of data collection and analysis. In addition, the response rates of cluster samples are typically higher than mailed surveys, thereby increasing statistical power. The cluster sampling protocol used in this research, as suggested by the Core Institute located at the Southern Illinois University, is outlined below.

1. Determining a representative sample

The University of Denver maintains computerized listings of classes being offered in any given academic quarter. The administration office at the University generated a list of these classes. As in the previous year, the specific procedure involved first, removing all classes that were designated graduate student courses. This was necessary since the intervention is directed at undergraduate students attending the University of Denver. Inclusion of graduate students in the sample would produce a misrepresentation of the target population. Next, all classes that contained less than 10 students were removed from the sampling frame. This was done primarily for purposes of efficiency. Finally, for each year a sample of 25 different classes was selected. This large cluster sample size was needed in order to achieve the desired sample size of approximately 500 students.

2. Gain approval to conduct the survey from administrators and faculty

Upon selection of the classes at the University of Denver, the researcher contacted faculty members whose classes were chosen to participate in the study. He placed telephone calls to each faculty member to explain the purpose of the study, gain approval to conduct a survey in their class and establish the timing of the survey. For faculty members who were willing to have their class participate in the study, the researcher determined a time to visit the class and administer the survey instrument. In the event that a faculty member declined the invitation to participate, the evaluator randomly selected a substitute class

and contacted the faculty member. All classes selected to participate were scheduled for survey administration over a two-week period to reduce possible contamination effects from temporal variation. Additionally, all sampling took place during a period not corrupted by school activities that might encourage alcohol consumption, such as exams, winter festivals, spring breaks, or Greek-life recruitment.

3. Administer the survey

On the day of the survey administration, the evaluator arrived to class at the agreed-upon time. As pre-arranged, the instructor turned the class over to the evaluator who explained the survey to all the students in attendance. The evaluator distributed the letter of invitation and informed consent to each student. After explaining the informed consent procedures, the evaluator distributed the surveys, #2 pencils, and self-sealing envelopes for students to deposit their surveys and ensure anonymity. After completion of the surveys, which averaged approximately 30 minutes per survey packet, the evaluator collected the sealed envelopes and pencils and returned the class to the instructor.

During the baseline year, 439 students were sampled at the University of Denver. In the remaining two intervention years, 434 and 421 students returned completed surveys. Although there is slight variability between the demographic indications for the population parameters and the sample means of University of Denver students, there is comparability between these characteristics indicating representativeness within the sample. Being an expensive private school, students attending the University of Denver are predominantly white. In addition, as indicated by the sample characteristics and population parameters, a larger number of women than men attend the University of Denver. The racial and gender breakdown of the sample closely matches the population parameters.

Samples from students attending The Colorado College were also drawn to serve as a comparison group. While a random sampling procedure was utilized in the previous year, a cluster sampling design, similar to the one used at the intervention site, was implemented. Like the intervention site, classes were selected randomly and questionnaires were distributed to students. The only variation was that students were asked to return their surveys over the next few days as opposed to completing them in class. For each of the sample years, 219, 298, and 130 students respectively returned completed surveys.

4. Comparability across Sites

Social norms approaches to reducing alcohol use and related problems among college students have received strong empirical support. There are a number of colleges that have demonstrated positive impacts on student drinking. However, many of these studies have not utilized a comparison group design. The strength of the current project is to test the impact of a social norms approach through a non-equivalent comparison group design. Since the intervention and comparison sites produce two independent samples, analyses must demonstrate non-significant variability between the two sites. If a significant difference exists between the intervention and comparison sites, efforts to

demonstrate outcomes of the project would be compromised. Consequently, the two sites should be comparable to each other. Chi Square and T-test statistics are used to test the degree of variability across sites.

MEASUREMENT MATRIX

Construct	**Instrument**	**Quantitative/ Qualitative**	**Measure**	**Reliability**	**Validity**	**Std for Population**
Alcohol and Drug Use	Core Survey	Quantitative	Last 30 days and Last year use	.60-..90	NA	yes
Perceptions of Use	Core Survey	Quantitative	Perceived amount of student use of alcohol and drugs	.60-.90	NA	yes
Fidelity	Social Norm Fidelity Scale	Quantitative and Qualitative	Degree of compliance with model	Unknown	NA	yes
Consequences of Use	Core Survey	Quantitative	Number of problems associated with use	.60-.90	NA	yes
At-risk Alcohol Use	Core Survey	Quantitative	Number of times students report drinking 5 or more drinks at sitting	.60-.90	NA	yes
Believability	Supplemental Survey	Quantitative	Degree to which students believe the reported social norms messages	.66	NA	yes

c. Measurement Specification

In Year 01 the *Core Alcohol and Drug Survey* (Core) and the *Campus Survey of Alcohol and Drug Norms* developed by the Core Institute at Southern Illinois University were used to assess the impact of the social marketing campaign on students attending the University of Denver. These instruments have been used frequently to examine college alcohol and drug use (Johannessen, Collins, Mills-Novoa & Glider, 1999; Cashin, Presley, & Meilman, 1998; Meilman, Cashin, McKillip, & Presley, 1998) and are appropriate for the proposed project. Scaled items in the Core Survey instruments include (see appendix):

- Demographics
- Perceptions of campus policies
- Average number of drinks per week
- Frequency of binge drinking
- Patterns of ATOD use
- 30 Day use of ATOD
- Attitudes and beliefs
- Perceptions of others' ATOD use
- Consequences of use.

The *Core Alcohol and Drug Survey* has demonstrated high degrees of reliability with inter-coder reliability coefficients approaching .90 and item consistency, as measured by Cronbach's alpha, ranging on average between .60 and .90 (Presley, Meilman, and Cashin, 1996).

During Year 02 and Year 03, a Supplemental Survey was developed and implemented in order to measure dosage and believability. In addition to these items, this survey measured student support of the social norms campaign as well as self-reported perception of the impact of the campaign. All items used Likert style response formats. Additionally, selected items from the *Campus Survey of Alcohol and Drug Norms* were included in the Supplemental Survey because they provide specific breakdowns on the perception of use by various groups relative to one's own use. (The *Campus Survey* was used in Year 01 but discarded in Years 02 and 03 because it significantly increased the amount of time needed to collect data.) All the completed *Core Surveys* and Supplemental Surveys were coded and mechanically scanned into an Excel file that was subsequently converted into SPSS data files.

d. Data collection methods and procedures.

See above.

e. Data analysis plans.

Statistical analysis of the items contained within the instruments across the intervention and comparison sites include Chi Square, T-Tests, analysis of variance, and multiple regression. Since this project is concerned with testing the impact of a particular intervention, T-test and analysis of variance are used extensively. These statistical tests allow for the comparisons of means on a range of variables across different groups.

E. RESULTS

1. Process Findings, Fidelity and Limitations of Data

a. Process Findings

The process findings as they relate to this project correspond to each of the hypotheses outlined earlier. Each of these is discussed below.

Hypothesis 1 states that University of Denver students misperceive the levels of alcohol use on campus. The argument that college students misperceive the normative climate surrounding the use of alcohol on campus is a central tenet of social norms theory. According to Haines, "this theory holds that if students perceive something to be the norm, they tend to alter their behavior to fit that norm." Consequently, social norms interventions are directed at correcting the "reign of error" by confronting perceived norms with actual norms. Contrary to recent data reported by Wechsler and his associates at the Harvard School of Public Health (Street, 2000) that college students accurately perceive their peers drinking behavior, University of Denver students have high levels of misperception regarding the frequency and quantity of alcohol consumed on their respective campuses. As indicated by the table below, students at the University of Denver continue to systematically overestimate the amount of heavy drinking among their peers as well as underestimate the frequency of moderate drinking patterns.

Table 3. Perceived vs. reported frequency of alcohol use among DU students

Frequency of Alcohol Use Past Year	Perceived Use			Reported Use		
	2000	2001	2002	2000	2001	2002
Never	0	.4%	.5%	10.0%	12.8%	10.6%
Once per year	.2%	.2%	0	3.5%	6.2%	4.6%
6 times per year	.2%	.5%	.7%	.4%	7.3%	9.6%
Twice a month	2%	1.7%	1.7%	12.6%	9.8%	13.4%
Once a week	21%	24.3%	25.2%	25.8%	19.8%	18.0%
3 times per week	49%	47.9%	43.3%	24.7%	24.8%	27.3%
5 times per week	18%	18.9%	16.5%	9.1%	9.1%	8.9%
Everyday	6%	4.7%	8.5%	0	1.4%	1.9%

As this table indicates, while approximately 70 percent of the students believe that most other students drink three times a week or more, the majority of students, approximately 60 percent each year, indicate that they actually drink once a week or less.

Hypothesis 2 states that the drinking behaviors of students attending the University of Denver are more moderate than perceived by students. As the above tables indicate, students' perception of consumption tends to be higher than reported use. This is exactly the prediction suggested by social norms theory. However, to what extent are the

patterns of reported use among students moderate? The potential efficacy of a social norms approach to reducing college drinking is premised not only on the assumption that students misperceive amount and frequency of use, but also that the reported levels of use are actually moderate. If the normative climate does in fact support more permissive behavior with regard to use, then a social norms approach will be of limited value since the identified norm is heavy use. In other words, reported levels of use and associated behaviors must be moderate for more than fifty percent of the student population so that messages promoting the norm of moderation can be disseminated. The data below indicate that, despite perceptions to the contrary; the majority of students who completed the survey during the second year of funding at the University of Denver, like the previous year, continued to fall in a more moderate range of alcohol use.

Table 4. Percentages of reported use among University of Denver students.

	2000	2001	2002
Used alcohol at least once in past year	90.0%	87.2%	89.4%
Used alcohol at least once in past month	83.2%	83.2%	77.5%
Drank 5 or more drinks per sitting in past 2 weeks	49.2%	56.8%	54.4%
Drank 5 or less drinks per week	63.7%	60.4%	59.4%
Drank alcohol 1 time or less per week	66.0%	65.0%	62.0%

As the above figures indicate, the majority of students at the University of Denver consume alcohol. Only slightly more than 10 percent of the students sampled in each year indicated that they had not consumed alcohol in the past year. Consequently, the norm at the University of Denver, not surprisingly, is use. Given that use of alcohol is normative for students at the University of Denver, efforts to prohibit students from using would not likely be effective. As predicted by social norm theory, informing students that excess is not the norm may be sufficient in reducing levels of reported use and associated negative consequences without necessarily stopping use entirely.

However, for such efforts to work, the normative climate must support more moderate practices. One measure of the degree of moderation vs. excess is the questionnaire item that measures the frequency in which students report drinking 5 drinks or more in one sitting. This is the standard high risk drinking measure. Table 5 does indicate that there is a high degree of reported use that is in the range of 5 or more drinks per sitting in the past two weeks. However, there was a slight decline in heavy drinking in Year 03 when compared to Year 02. Despite this reduction, students at the University of Denver continue to exceed national figures that have been found to be 44 percent. That students at the University of Denver continue to be above the national average should not be seen as a surprise. The University of Denver falls into a category of schools that generally have higher rates of use, i.e., small, private liberal arts colleges that have a heavy concentration of fraternities and sororities, an emphasis on team sports, and a large number of residential students living on campus.

Fortunately, other items reported in the above table are clearly indicative of the more moderate drinking patterns that exist at the University of Denver. As indicated in Table

5, these measures have remained consistent over the two years. Data collected during the baseline year indicated that 66 percent of the students reported using alcohol once a week or less in the past year, while in Year 02 that figure was 65 percent. Year 03 data on this variable indicates little change with 62 percent of the students reporting that they drink once a week or less. This contrasts sharply with the perception that over 90 percent of DU students drink once a week or more. Also, while Year 02 data indicated that 60 percent reported consuming 0-5 drinks on average, the Year 03 follow-up demonstrates a similar pattern. Just under 60 percent of University of Denver students in Year 03 report consuming 0-5 drinks per week.

Another indication of the degree of drinking at the University of Denver can be found in the reported negative affects associated with alcohol use. Table 6 below reports on the percentage of students indicating they have experienced the problem behavior at least once in during each sample year.

Table 5. Reported problems associated with alcohol and/or drug use.

	2000	2001	2002
Missed class	41.3%	46.7%	43.4%
Performed poorly	28.0%	27.8%	31.2%
Believed had a drinking problem	19.0%	16.7%	12.8%
Drove under the influence	41.0%	37.0%	37.9%
Did something you regret	48.5%	47.0%	42.7%
Got into an argument	31.4%	36.0%	34.9%
Experienced memory loss	39.7%	39.6%	39.9%
Damaged property	10.6%	11.2%	11.8%
Been injured or hurt	16.4%	19.3%	21.5%
Been criticized	43.1%	46.7%	30.6%

The above table suggests that while many students reported experiencing these problems at least once during the second year of data collection, the majority of students, like the first year, continue to not experience these problems. This is not to minimize the large percentage of students that do report negative affects. The fact that over 40 percent of the students sampled in each year report alcohol-related consequences such as missing class and doing something they regret, and nearly 40 percent report experiencing memory loss due to drinking is cause for concern. However, this table also indicates that problem behavior associated with use in not the norm. This finding is of critical importance for a social norms approach that seeks to emphasize healthy as opposed to problem behaviors.

Related to the above data, **hypothesis 3** posited that moderate messages could be developed for the University of Denver. As indicated by the dissemination materials included with this report, a number of moderate normative messages have been developed from the baseline data. The specific normative messages that were circulated during Year 02 of the social norms campaign included the following:

- 66 percent of DU students use alcohol 1 time or less per week.
- 64 percent of DU students have 0-5 drinks per week.
- 89 percent of DU students have not damaged property due to drinking or drug use.

As the above tables indicate, moderate normative messages were found to exist for University of Denver students in Year 02. These specific statistics were not used in the social norms campaign during Year 03 of the campaign. The specific message marketed in Year 03 was:

- Most DU students drink five or fewer when they party.

The decision to change the message in Year 03 is explained in the implementation section of this report. In addition to the above message, efforts were initiated during Year 03 to confront the "myths" about the social norms program students were developing. These "myths" are described in the implementation section.

Based on the data presented above, all three process hypotheses outlined earlier in this report have been supported. First, as predicted by social norms theory, University of Denver students dramatically misperceive the frequency and amount of alcohol consumed among their peers. Students systematically over-estimate the extent of heavy use and under-estimate the degree of light-to-moderate use. As indicated by the second year of data, this overestimation continued into the second year. Second, contrary to this misperception, students at the University of Denver report having more moderate patterns of alcohol use than their peers. As in the previous year, the majority of students at the University of Denver report patterns of moderate alcohol use. This is not to suggest that all students have moderate patterns or that there is not cause for concern about the heavy consumption practices of some students. Finally, data collected during the second year of this project have been identified and incorporated into the project's dissemination materials.

Hypothesis 4 and **hypothesis 5** found support in Year 02 and Year 03 data. According to the quantitative data collected, students experienced a high dosage rate of social norms messages in Year 03, although it was somewhat lower than the previous year. As indicated by the table below, the overwhelming majority of students in Year 02, 85 percent, reported having seen a social norms message at least once or twice per week. In Year 03, only 67 percent indicated seeing the social norms materials once a week or more. Also, those students reporting that they had seen the materials daily was reduced by almost half.

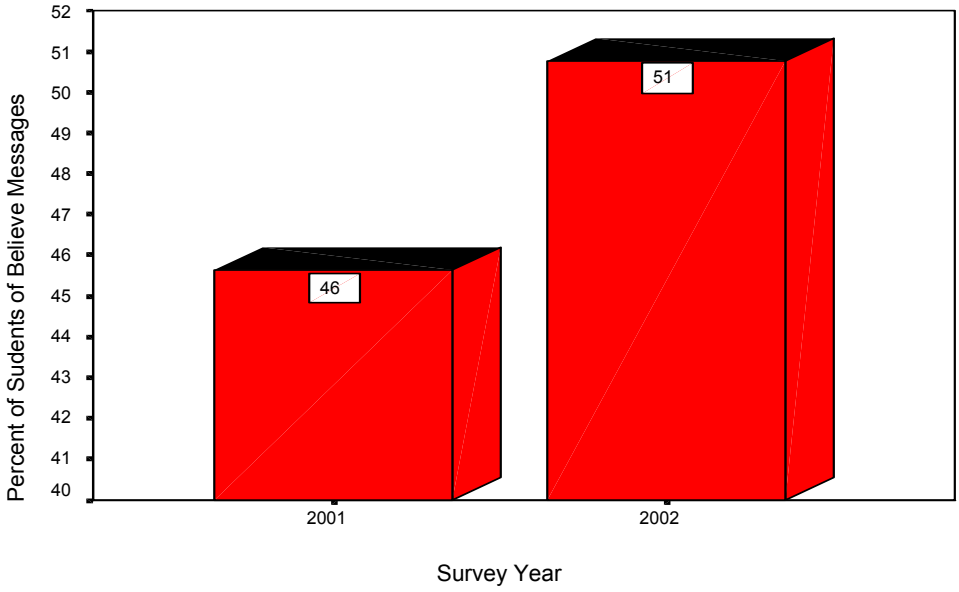
Table 6: Frequency of times students report seeing social norms messages		
Frequency Seen	Percent	
	2001	2002
Daily	42.5	23.4
3-4 times per week	26.4	18.1
1-2 times per week	16.0	25.5
1-3 times per month	7.8	13.1
Less than once per month	3.5	9.6
Never	3.8	5.3

However, despite this high rate of saturation, there is a clear indication from the data collected in Year 03 that a large percentage of students continue to disbelieve the social norms messages being reported through the intervention. As the table below indicates, believability of the campaign, particularly with regards to the reports of alcohol usage, tends to be low.

Table 7. Believability of the social norms messages	
Message – 2001	Percent Believe
"66 percent of students drink once a week or less"	42.4%
"64 percent of students have 0-5 drinks per week"	45.7%
"89 percent of students have not damaged property"	70.7%
Message – 2002	
"Most DU Students Drink 5 or Fewer when they Party"	51%

Although almost half of the students in Year 03 indicate they do not believe the reported statistics, the level of disbelief was lower in Year 03 than in Year 02. Figure 1 below demonstrates that believability of the social norm message significantly improved in the third year of the campaign ($T = 20.7$; $df = 798$; $P < .000$).

Figure 1. Student Believability in Messages by Year



b. Fidelity

The fidelity of the social norm project was assessed through the use of the Social Norm Fidelity Instrument developed in Year 03 (see Appendix 5). The evaluator created this instrument due to the fact that no such instrument existed to assess fidelity of social norm projects. This was determined after the evaluator contacted several leaders in the social norming field and was informed that no such instrument has yet been developed. Subsequently, the evaluator developed an instrument by creating assessment items that related to the various components of the theoretical model utilized in the project. The face validity of this instrument appears sound.

Once the instrument was developed, copies were distributed to each of the project staff and stakeholders. A group meeting then took place one week after the distribution of the instrument in order to collect fidelity data. A trained facilitator conducted the group meeting and data collection process. The fidelity assessment meeting occurred over a two-hour time period in which compliance to the various components of the model was assessed and quantitatively measured. The trained facilitator recorded collective responses to each item on the quantitative portion of the assessment tool. In addition, project accomplishments and limitations as they related to the fidelity of the project were identified and recorded. A quantitative score was determined for each of the components of the program model used to guide the project and a total score from these separate portions was determined. The results of this fidelity exercise appear below.

Fidelity Exercise Results:

Participants carefully discussed and assessed the various components of the project that related to the program logic. These components included:

- Planning and environmental advocacy
- Collection of baseline data
- Message development
- Marketing plan
- Pilot test and refinement of materials
- Implementation
- Evaluation

Each of these components is discussed in greater detail in the fidelity instrument in the appendix. Suffice it to say here, tasks associated with each component were examined separately as part of the assessment of fidelity.

1) Planning and environmental advocacy

Overall, the stakeholders and project staff believed that the goals and objectives of this stage were adequately followed and met. Group participants believed that seventy percent of the various political and social issues on campus that might affect the social norms campaign were assessed and dealt with in the early stages of the project. However, staff members felt that more "buy-in" from the university would have been preferred. While there was representation of the university in early meetings, these representatives were not typically from the highest echelon of the university administration. Participants in the fidelity exercise unanimously felt that stakeholders were adequately trained in social norming theory and application. Most felt that there were a sufficient number of stakeholders, but again, many believed that higher-level administrators should have participated including, Vice Provost of Undergraduate Studies, Director of Health Services, Marketing professors, Chancellor, and the Director of Residence Life.

The notable successes of this stage were:

- Creation of a large stakeholder group
- Involvement of campus life offices in project
- Support from Office of Sponsored Programs
- Involvement of the Communications Office

The suggestions identified with this stage included:

- Educate campus mentors on social norming
- Advocate for upper-level administrative participation in campaign
- Achieve greater advocacy from selective student groups such as athletes.

2) Baseline Data

The fidelity of the baseline data collection portion of the project was assessed to be strong. Stakeholders unanimously agreed that the quantitative data necessary for the

social norms campaign was collected competently and accurately. However, stakeholders believed that more qualitative data could have been collected. Three successes of the baseline data collection portion of the project were identified:

- Faculty cooperated with survey administration
- Good representative sample of DU students
- Data supported social norm theory that healthy behavior was the norm

The suggestions offered by participants in the fidelity exercise included:

- Increased triangulation of data
- Use of a shorter survey
- Web-based survey to collect data

3) Message development

Stakeholders strongly agreed that the campaign messages were derived from the baseline data, a requirement of social norms marketing, and that the messages supported healthy behaviors of the majority of students. This is critical to the fidelity of a social norms campaign. The successes identified during this stage of the project included:

- Project was able to develop healthy messages from data
- The campaign represented a grassroots project
- Students were actively involved in message development

Some of the suggestions for improvement of the campaign included:

- Utilization of more focus groups to develop messages
- More up-to-date images for posters
- Employment of single as opposed to multiple message strategies

4) Market plan

The market plan stage of the social norms campaign consists of designing a methodology of disseminating positive health messages. Participants in the fidelity group unanimously felt that an adequate marketing plan had been developed for the University of Denver. The materials developed were consistent with the social norms model used in the project.

The strengths of this portion of the project were assessed as follows:

- Extensive student stakeholder input
- All faculty were kept informed of the materials and had access to these materials

Suggestions about improving the fidelity of this portion of the project included:

- Increased input from upper-level administration
- Increased buy-in from multicultural groups
- Linking of marketing materials to various academic programs like communication and business

5) Pilot test and refine materials

The fifth step in the social norms model involves pilot testing of the materials and making refinements where needed. While the participants strongly believed that students were used to provide feedback on messages and that this feedback was used to refine the materials, there was less agreement about the pilot testing of the materials. Many participants in the fidelity meeting felt that this step was weakly carried out, particularly in the first year. Increased attention was given to pilot testing in the subsequent years.

The specific successes associated with the phase of the project included:

- A well-trained staff
- Student input on materials
- Development of a consistent positive health message
- Web-based pilot testing

Participants had the following suggestions to improve fidelity of this stage in the model:

- More systematic pilot testing
- Broader student involvement
- Pilot testing critical during the first year

6) Implementation

Overall, participants in the fidelity meetings believed that the implementation was consistent with the goals and objectives of the model. Messages were distributed according to the marketing plan and there was a high saturation of messages throughout the campus. However, there was some concern that the "next generation" of messages were not adequately piloted and that there was less saturation in Year 03 of the campaign.

The successes identified by participants included:

- Students knew the message
- Good campus saturation
- Creative responses to campaign challenges

The suggestions offered for increasing fidelity included:

- Work harder to increase credibility of message
- Increase administrative buy-in

- Minimize staff turnover and motivate students to participate more

7) Evaluation

The final stage in the social norms model used in this project consists of evaluation. Evaluation is an ongoing part of this model since data is continuously needed in order to generate new messages. Overall, participants believed the evaluation was conducted in a competent fashion and in keeping with the design of the social norms model. The evaluation was helpful in providing feedback to stakeholder groups, in assessing saturation levels, and overall impacts of the campaign.

The specifics successes of the evaluation stage included:

- Team cooperation
- Extensive presentation of information outside DU to promote theory of social norming
- Evaluation was handled by a faculty member

Suggestions for increasing the fidelity of the evaluation included:

- Using a shorter survey
- Increasing the level of staff support for evaluation
- Acquiring additional funds for evaluation
- Use web-based survey

Fidelity Summary:

Overall, participants in the fidelity exercise believed that the goals and objectives of the social norms model employed in this project were closely followed. Although it is an arbitrary measure, participants believed that there was an 84 percent compliance with the model used in the project. This figure was derived by dividing the total number of categories assessed in the fidelity instrument with the total number of percentage points associated with each sub-area of the various steps. The total percentage points for all the combined sub-categories equaled 1845. The evaluator then divided this number by the total number of sub-categories. For this exercise, 22 separate sub-categories associated with the model were developed and scored.

2. Outcome Findings

a. Comparability across Groups

In any quasi-experimental study using a treatment and comparison group, there is also some degree of variation across the sample parameters of each group. This is due to the inability to actually control who receives the intervention. Estimating the compatibility of comparison groups is essential to assessing the internal validity of statistical results. The following tables represent efforts to determine the degree of compatibility across the two sample sites.

Table 8. Compatibility of Site: Demographics		
	T. Value	P. Value
Age	5.19	.00
Gender	.031	.97
Race (White/Non-White)	.170	.86
Grade Point Average	1.82	.06
Volunteer Activities	1.37	.17
Full Time Attendance	.924	.35

As the above table indicates, there is a slight variation in age across the two study sites. Students attending the comparison site, Colorado College, are somewhat older than students attending the intervention site, the University of Denver. The average age of those at Colorado College is 20.3 years compared to 19.7 years. Although these are statistically significant differences, the actual differences are minimal. All the other demographic indicators suggest that there are no other significant difference between the intervention site and the comparison site.

There is also evidence of comparability across these two sites when such variables as age of first use and other drug use are examined. It is believed that these variables should not be affected by the intervention and therefore are good measures of comparability. The tables below provide T-tests on selected variables across the intervention and comparison sites. As demonstrated in these tables, there are few significant differences that emerge from the analysis of the data. Table 8, for instance, indicates that for most substances, there are no self-reported differences with regard to the age of first use. Thus, Year 03 data indicates a close match in terms of age of first use between the intervention and comparison sites. There are no significant differences in age of first use that might threaten internal validity.

Table 9. Age of first use in intervention and comparison sites		
	T. Value	P
Alcohol	.220	.82
Amphetamines	.810	.46
Cocaine	.969	.33
Designer Drugs	.238	.81
Hallucinogens	4.83	.00
Inhalants	1.93	.06
Marijuana	1.66	.96
Sedatives	.177	.85
Steroids	.845	.39
Tobacco	.114	.25
Other Drugs	.297	.76

With the exception of hallucinogens, there is no difference in the age of first use across students attending each of the study sites. However, in the case of hallucinogens the overwhelming majority of students at both the intervention and comparison sites had never used these substances. Thus, with regard to age of first use of alcohol, tobacco and other drugs, there do not appear to be significant differences between the two sites indicating a high degree of compatibility.

There is a greater degree of significant variation in 30-day use of tobacco and other drugs between these two sites. There are slightly higher rates of tobacco, hallucinogen, and marijuana use at the University of Denver when compared to the comparison site. However, the mean differences for each of these substances are minimal, ranging from .02 to .25.

Table10. Reported 30-day use at intervention and comparison sites

	T	P
Tobacco	2.42	.01
Amphetamines	.524	.60
Cocaine	.772	.44
Designer Drugs	.064	.94
Hallucinogens	2.85	.00
Marijuana	2.81	.01
Inhalants	1.30	.19
Opiates	.724	.46
Sedatives	.285	.77

Based on the above tables, the two samples of students at both the intervention and comparison sites are extremely similar. In each sample, most students are female, exactly 58.5 at each study location and the majority of students, 67 percent at each school, are white. In addition, there is little variation in student substance use across the two sites.

b. Attrition Issues

For this social norms project there are no attrition issues in the traditional sense. A social norms campaign is a universal approach to prevention. Consequently, potentially all students attending the University of Denver will be exposed to the social norms materials. Students are not being selected to participate in any separate intervention nor are only a small number of students being exposed to the social norming campaign. As a result, attrition does not pose a problem in this project.

While there are no attrition issues with this type of campaign, continued care needs to be taken to ensure high response rates in subsequent post-test data collection periods. Although attrition is not an issue, selecting a representative sample from the population each year is of critical importance. At the University of Denver, an equal number of students participated in all three years of the project. Also, with the introduction of cluster sampling techniques at The Colorado College, the sample size of the comparison

site, while lower than the intervention site, produced a higher number of respondents in Year 02 than the previous year. However, the Year 03 sample was considerably lower than in previous years.

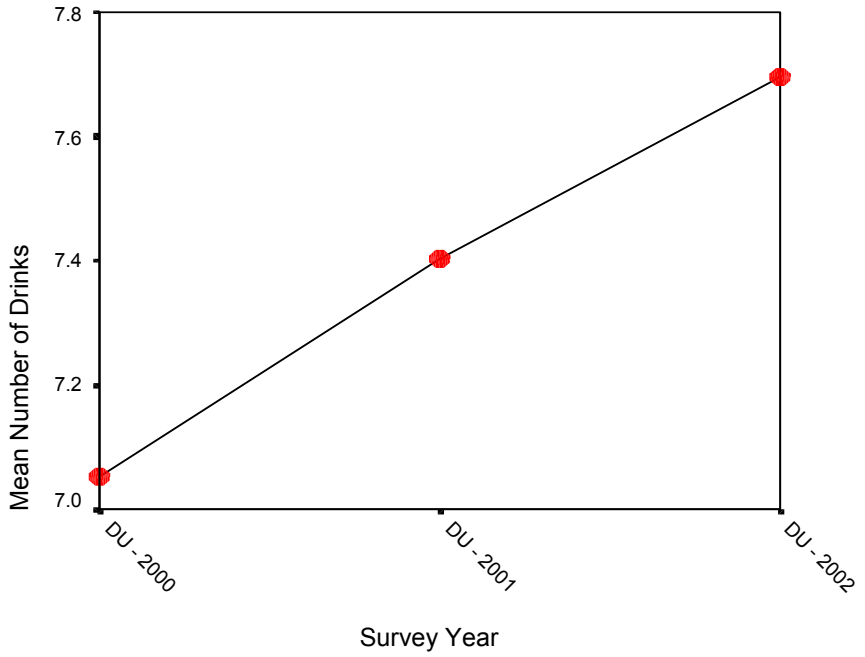
c. Statistical Results on Key Variables

Results from this study will be presented in three distinct sections. The first section will consider the impact of the social norm intervention on the use of alcohol among students at the University of Denver. The next section will explore the extent to which perceptions of drinking on campus underwent a change over the life of the project. The third section will examine the degree to which problems associated with alcohol use were reduced as a result of the social norm intervention. The final section of this section will explore comparisons between the intervention site and comparison site.

1. Impact of the Intervention

Examination of the entire three years of data demonstrates little evidence of significant change in either the actual rates of alcohol use or the perception of drinking at the intervention site. Analysis of variance procedures performed on a number of variables reveals little overall support of the social norm intervention. As the figure below indicates, there was an overall *increase* in the number of drinks per week reported by students at the University of Denver, although this increase is not statistically significant ($F = .411$; $df = 2$; $P < .66$).

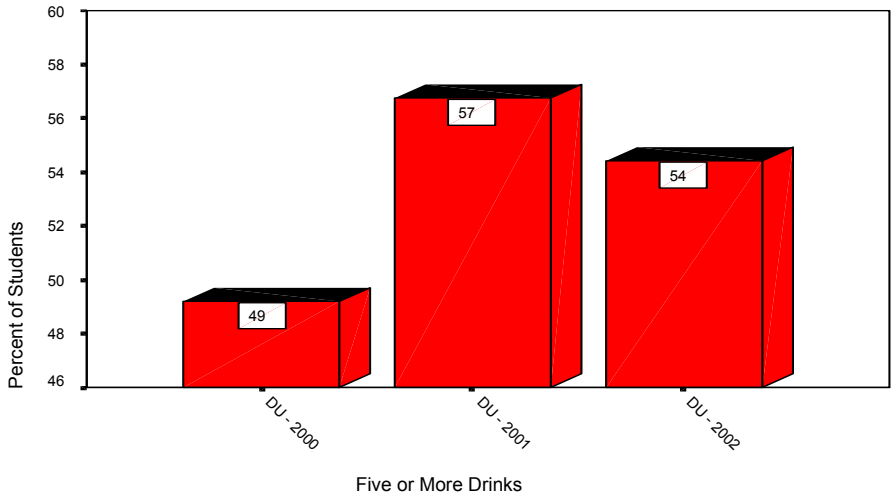
Figure 2. Mean Number of Drinks per Week by Year: University of Denver



During the baseline year, the average amount of alcohol consumed in a week was slightly over 7 drinks. This rate increased to also 7.8 drinks by the third year. Similarly, there

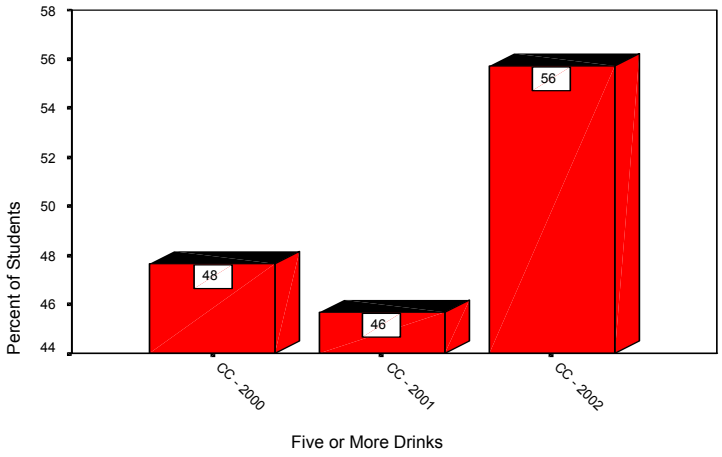
was little positive impact on the percentage of students reporting that they had consumed five or more drinks in the past two weeks. While there was a statistically significant increase in the percentage of students indicating this in the second year, this rate was slightly lower in the third year, although still not lower than the baseline year ($F = 2.61$; $df = 2$; $P < .07$). In the baseline year, just over 49 percent of the students at the intervention site indicated they had consumed five or more drinks at a sitting in the past two weeks. This compares to 57 percent in Year 02 and 54 percent in Year 03 reporting at least one occasion of at-risk drinking in the past two weeks.

Figure 3: Percentage of Students Drank Five or More in Past Two Weeks: University of Denver



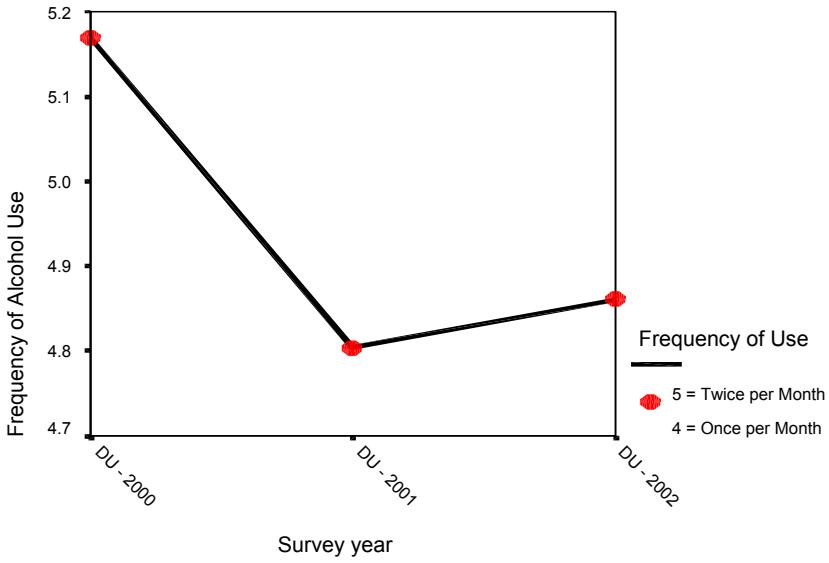
Although there was non-significant increase in those students indicating that they had consumed five or more drinks in the past two weeks in the intervention group, the comparison group, by contrast experienced a significant increase in at-risk drinking by the end of the intervention period ($F = 13.9$; $df. 2$; $P < .000$).

Figure 4: Percentage of Students Drank Five or More in Past Two Weeks: Colorado College



Other drinking-related variables show somewhat more positive impacts of the social norm intervention on students at the University of Denver. For instance, there was a significant *decrease* in the frequency of reported alcohol use by the students at the University of Denver over the three-year intervention. As figure 5 demonstrates, while the mean numbers of times students indicate they use alcohol was twice a month in the baseline year, by the third year of the intervention this figure had declined to once a month ($F = 3.12$; $df = 2$; $P < .04$).

Figure 5: Frequency of Alcohol Use by Year University of Denver

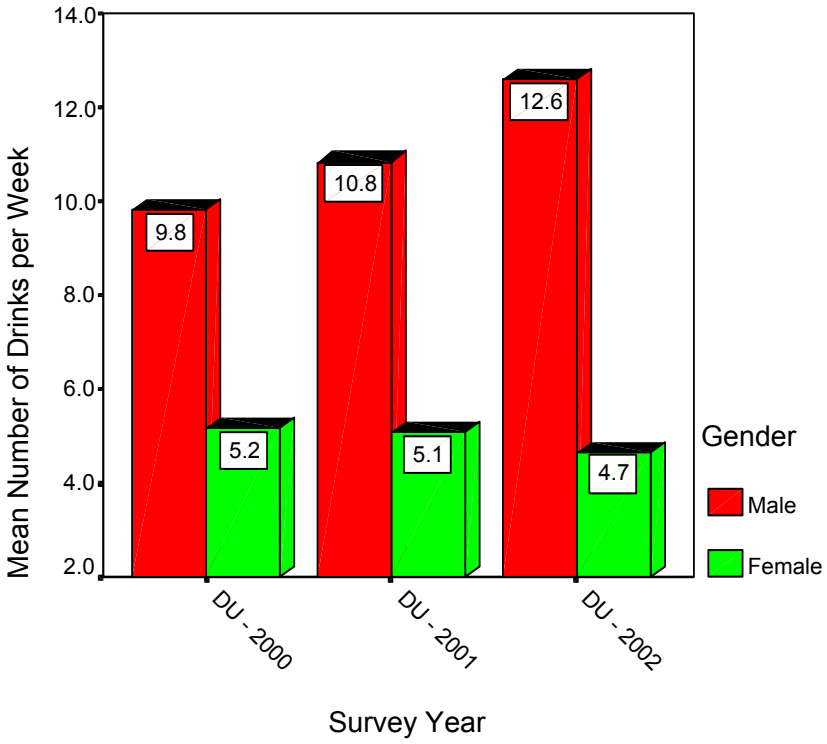


With regard to the impact of the social norm intervention on the total sample of students attending the University of Denver, the results appear to be somewhat mixed. While there was a reported non-statistically significant increase in the amount of alcohol used by students over the three years, there was a corresponding significant decrease in the frequency which alcohol was used by students.

However, these general trends obscure a broader reality of the social norm intervention at the University of Denver. As reported in previous reports, there is a significant and consistent gender effect that has been observed in the data. As the data below illustrates, women appear to have benefited more from the social norm intervention than did men, and in some cases, trends between males and females appear to go in completely disparate directions. There is evidence in the growing literature in social norming that women may be benefiting from social norms intervention earlier or more than males. Berkowitz (2002) and others (Odahowski & Miller, 2000; Usdan, 2003) have found evidence of a gender effect of social norming programs in which women have been found to respond to such programs more than men.

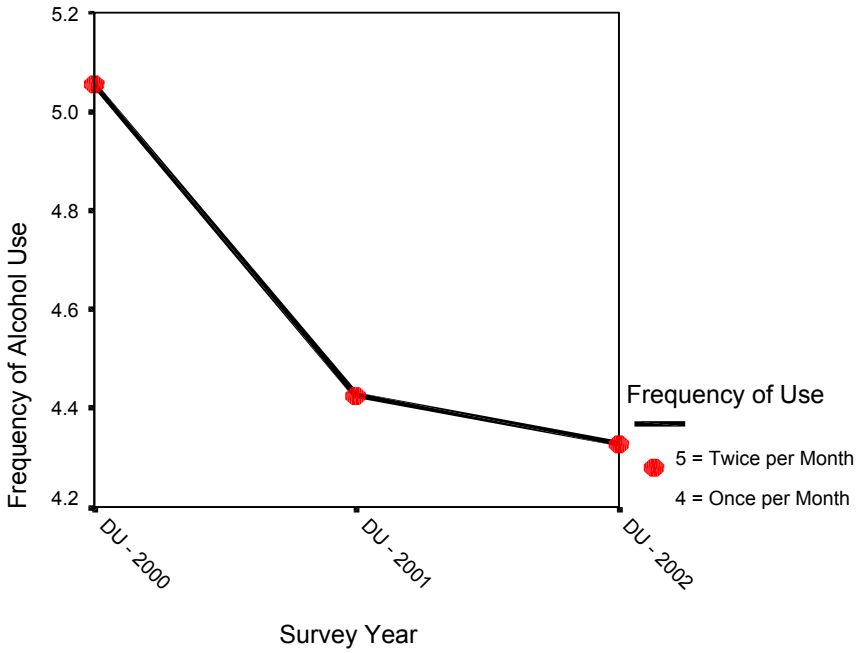
At the University of Denver, men experienced an *increase* in the amount of alcohol they consumed over the course of the project while women experienced a slight *decrease* in the amount of their alcohol use. For instance, as figure 6 demonstrates, males increased their average number of drinks they consumed per week while women decreased the amount they used. Men increased their average weekly consumption of alcohol from just under 10 drinks in the baseline year to almost 13 drinks by the third year of the intervention. By contrast, women decreased their weekly amount of alcohol use from over 5 drinks per week to less than 5 drinks per week.

Figure 6: Mean Number of Drinks per Week by Gender and Year
University of Denver



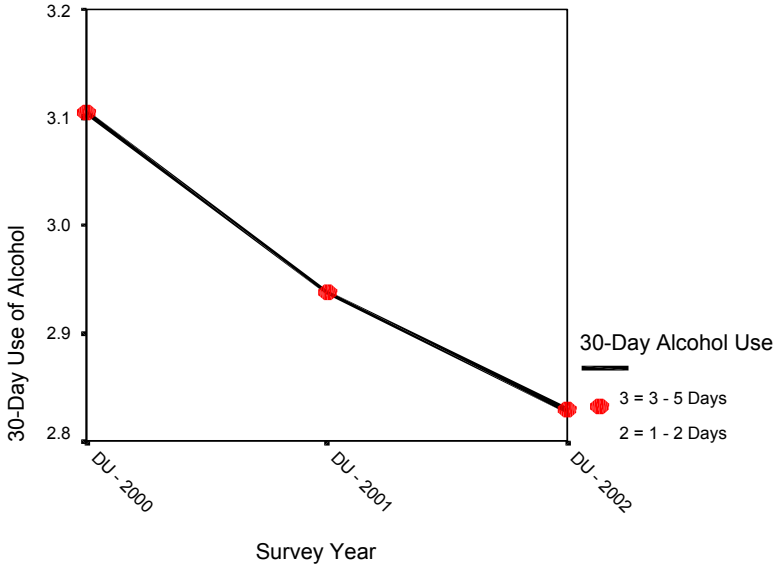
As indicated in this figure, men and women appear to be experiencing distinct trends. Support for these distinct trends is evidenced elsewhere in the data. As the figure below illustrates, women reduced their frequency of alcohol use across the three years of the intervention at the University of Denver ($F = 3.36$; df. $= 2$; $P < .03$). There is a significant decrease in the frequency of alcohol use among women from more than twice per month at the time of the baseline data to less than twice per month in the follow-up years.

Figure 7: Frequency Alcohol Use by Women by Year
University of Denver



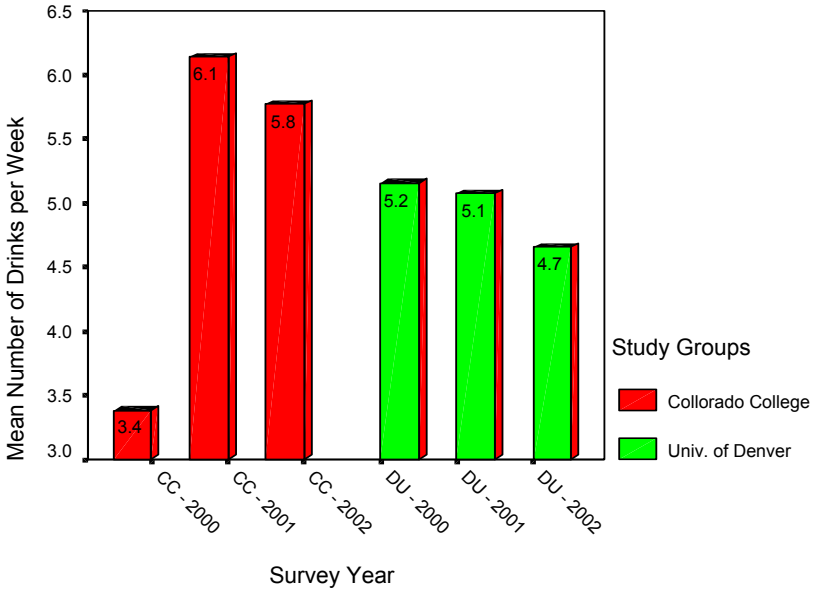
This finding is supported in figure 8, which indicates that the average 30-day use of alcohol among women decreased over the life of the project. However, this decrease was not statistically significant.

Figure 8: 30-Day Use of Alcohol by Women by Year
University of Denver



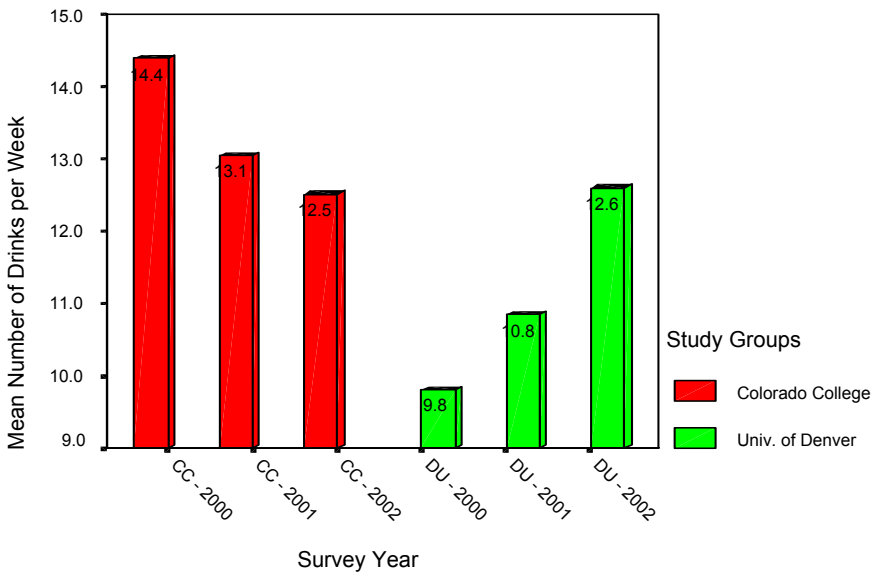
It should be emphasized that the reductions in the rate of drinking by women at the University of Denver occurred at a time when the rate of drinking at the comparison site, Colorado College, was increasing (F = 7.7; P < . 000). As the figure below indicates, women attending the Colorado College *increased* the quantity of their use while women at the intervention site *decreased* their use.

Figure 9: Amount of Alcohol Use per Week by Females
Colorado College and University of Denver



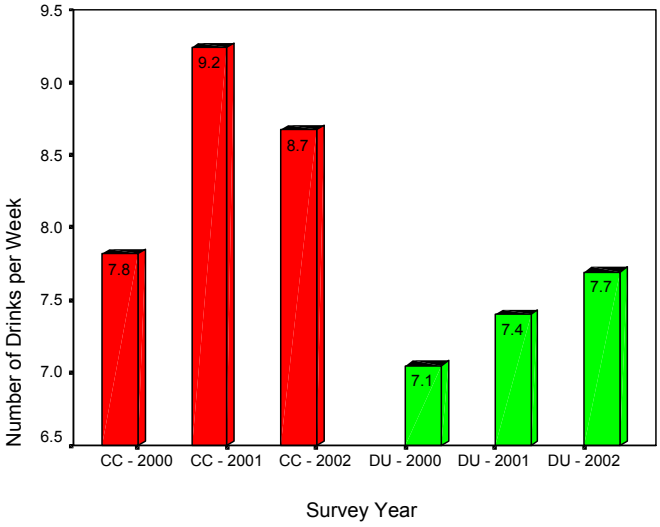
By contrast, men at the comparison site reduced their amount of alcohol use while men at the intervention site increased the amount of alcohol they typically used per week. While men at Colorado College slightly reduced their consumption of alcohol from over 14 drinks per week to 12, male students at the University of Denver increased their alcohol consumption from slightly under 10 drinks per week to over 12 drink per week. Interestingly, by the third year of the intervention, male students at both the intervention and comparison sites were consuming the same amount of alcohol per week.

Figure 10: Amount of Alcohol Use per Week by Males
Colorado College and University of Denver



While it appears that the social norming intervention had more effect on women than on men, even when compared to the comparison site, it is important to point out that students at the intervention site experienced less increase in the rate of alcohol use over the intervention period than did students at the comparison site. As the figure below illustrates, student alcohol use at the comparison site grew substantially more over the three-year period than did alcohol use at the intervention site.

Figure 11: Number of Drinks per Week by Year
Colorado College and University of Denver



Students at the intervention site consumed approximately 2 drinks less per week after the intervention than did students at the comparison site. As the above figure demonstrates, there is a statistically significant difference between the comparison group and the intervention group for the last two years of the intervention T = 2.36; df. = 1269; P < .01). The mean number of drinks for students in the comparison group for the last two years of the intervention was 9 drinks. This compares to 7 drinks at the intervention site.

2. Perceptual Changes

In addition to exploring the impact of the social norming intervention on the alcohol usage of students, the degree to which there is an association between decreasing levels of perception of alcohol use on campus and reported rates of alcohol consumption is also important to examine. Social norm theory predicts that, over time, perceptions of alcohol use on campus will decline. In order to test this assumption on this data a number of variables were regressed on the average rate of alcohol consumption in the baseline year and in the final year of the intervention. In the tables below, a regression model that examines a variety of variables as they affect consumption patterns is presented as well as a model containing only those variables that remained significant. Two models are presented for each of the baseline and final years of the intervention. A final regression model is presented that displays the predictive perceptual variables common across the two years.

Model 1: Effect of Perception on Alcohol Use: Regression Coefficients

	Baseline Year		
Variable	Beta	T. Value	Significance
Friends' Alcohol Consumption	.597	9.9	.000
Friends' Alcohol Use at Parties	.167	2.2	.029
Average Student Use at Parties	.016	.31	.760
Amount Heavy Drinking	.074	1.5	.120
Students' Alcohol Use at Parties	.073	.93	.344
Male Alcohol Use at Parties	.034	.34	.737
Female Alcohol Use at Parties	.092	1.2	.211
Alcohol Use by Fraternities	.140	1.54	.110
Alcohol Use by Sororities	-.241	2.74	.006
Average Student Consumption	.130	1.79	.078
Average Male Consumption	.004	.054	.955
Average Female Consumption	.069	.972	.733

Model 2: Effect of Perception on Alcohol Use: Regression Coefficients

	Baseline Year		
Variable	Beta	T-Value	Significance
Friends' Alcohol Consumption	.584	12.0	.000
Friends' Alcohol Use at Parties	.163	3.05	.002
Alcohol Use by Sororities	.096	2.15	.035

R2 = .45

As the above regression tables indicate, at the baseline there was a significant relationship between the perception of alcohol use on campus and one's own rate of alcohol consumption. Respondents' perceptions of their friends rate of alcohol consumption as well as their friends' use of alcohol at parties accounted for the majority of the variation in the above model. As the tables below demonstrate, the strength of these perceptions increases over time.

Model 1: Effect of Perception on Alcohol Use: Regression Coefficients

	Year 03		
Variable	Beta	T. Value	Significance
Friends' Alcohol Consumption	.479	8.08	.000
Friends' Alcohol Use at Parties	.401	5.99	.000
Average Student Use at Parties	.234	.3.38	.001
Amount Heavy Drinking	.070	1.77	.078
Average Student Consumption	.074	1.03	.304
Male Alcohol Use at Parties	.159	1.77	.078
Female Alcohol Use at Parties	.109	1.58	.114
Alcohol Use by Fraternities	.000	.000	.000
Alcohol Use by Sororities	.119	1.64	.102
Average Student Consumption	.021	.290	.772
Average Male Consumption	.167	.054	.955
Average Female Consumption	.206	2.55	.011

Model 2: Effect of Perception on Alcohol Use: Regression Coefficients

	Year 03		
Variable	Beta	T-Value	Significance
Friends' Alcohol Consumption	.520	10.0	.000
Friends' Alcohol Use at Parties	.367	6.46	.000
Students' Alcohol Use at Parties	.243	5.20	.000
Average Female Consumption	.102	2.49	.013

R2 = .60

In year 03, the perceptual variables continue to affect the rate of consumption, but the affect of perception has increased, suggesting that there is an increased tendency for students to drink less if they perceive lower rates of drinking among their peers. A direct comparison of common predictive variables across the two years and corresponding amount of variance explained illustrates this point further.

Model 3: Effect of Perception on Alcohol Use: Regression Coefficients

	Baseline Year		
Variable	Beta	T. Value	Significance
Friends' Alcohol Consumption	.586	12.1	.000
Friends' Alcohol Use at Parties	.112	2.3	.021

R2 = .42

Model 4: Effect of Perception on Alcohol Use: Regression Coefficients

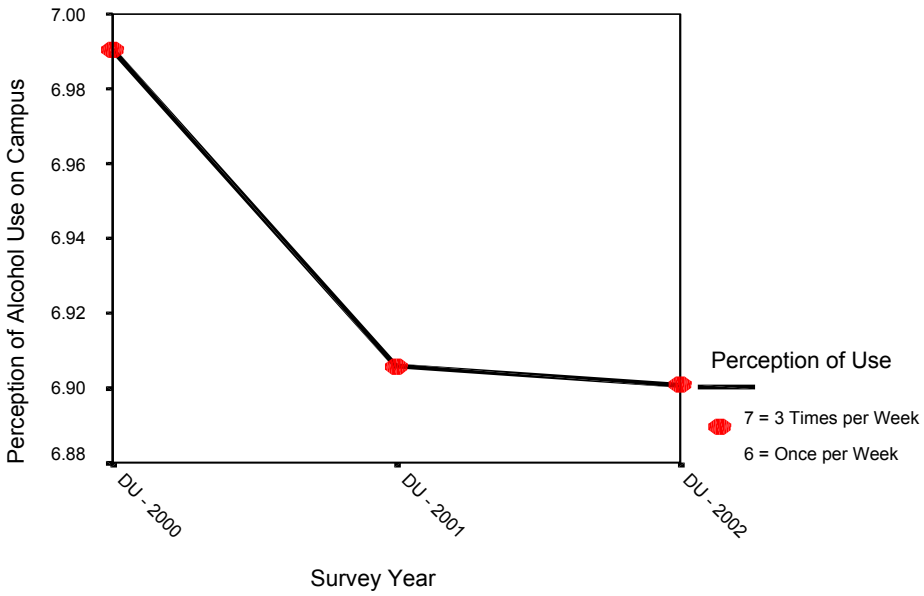
	Year 03		
Variable	Beta	T. Value	Significance
Friends' Alcohol Consumption	.614	13.1	.000
Friends' Alcohol Use at Parties	.187	4.00	.000

R2 = .56

The comparison between model 3 and model 4 suggest that the strength of the association between the perception of peer alcohol use and individual consumption grew over time. The total variance explained between the baseline year and Year 03 grew by 14 percent. Subsequently, by the third year, it appears that more negative perceptions of alcohol use among friends are more strongly predictive of reduced alcohol consumption by individual students.

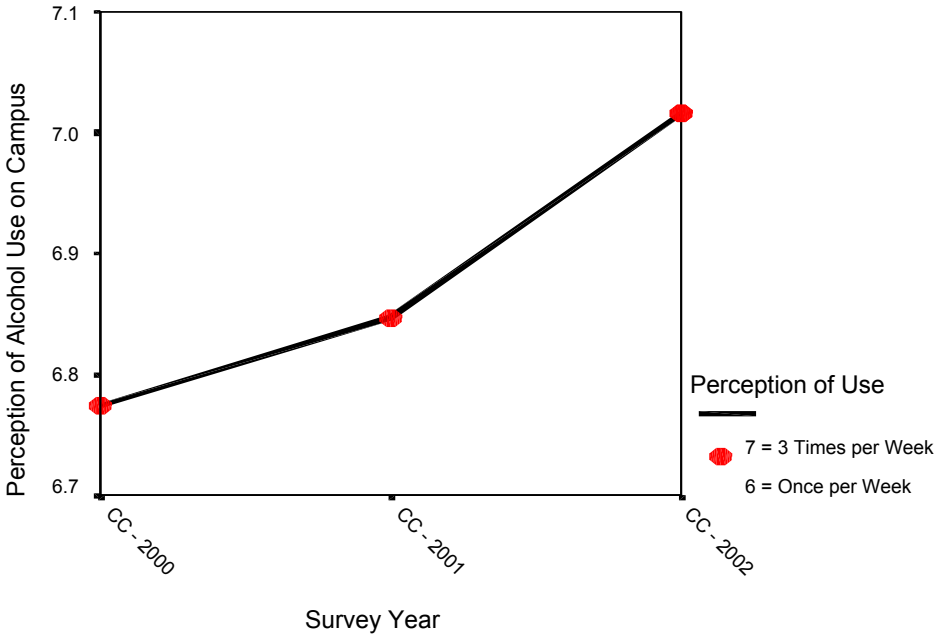
Overall, there have been positive changes in the area of student perception of alcohol use on campus. There was a slight decline in the perception of alcohol use on campus over the three-year period. The perception of the frequency of alcohol use decreased from 3 times per week in the baseline year to less than 3 times per week. According to social norm theory, such a decrease is critical for changes in alcohol consumption rates to occur.

Figure 12: Perceived Frequency of Alcohol Use by Year
University of Denver



While there was a decline in the perception of drinking at the University of Denver, the comparison group experienced a consistent increase in the perception of alcohol use on campus. As the figure below illustrates, the perceived frequency of alcohol use steadily increased over the three years among students within the comparison group.

Figure 13: Perceived Frequency of Alcohol Use by Year
Colorado College



As predicted by social norm theory, there were significant and consistent reductions in the perception of the consumption patterns among various students at the University of Denver. For instance, students in the intervention group reduced their estimates of drinking among their friends ($F = 7.03$; df. = 2; $P < .001$) and among other students in general ($F = 25.1$; df. = 2; $P < .000$)

Figure 14: Perceived Frequency of Alcohol Use Among Friends by Year

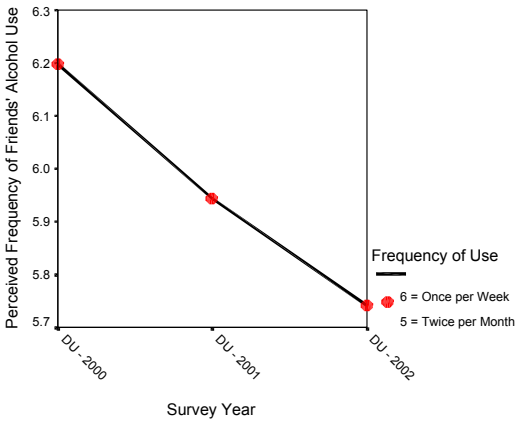
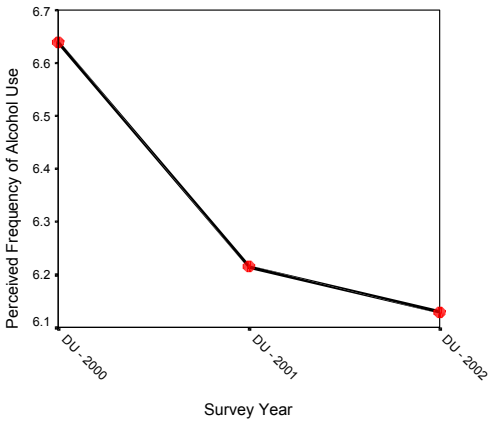


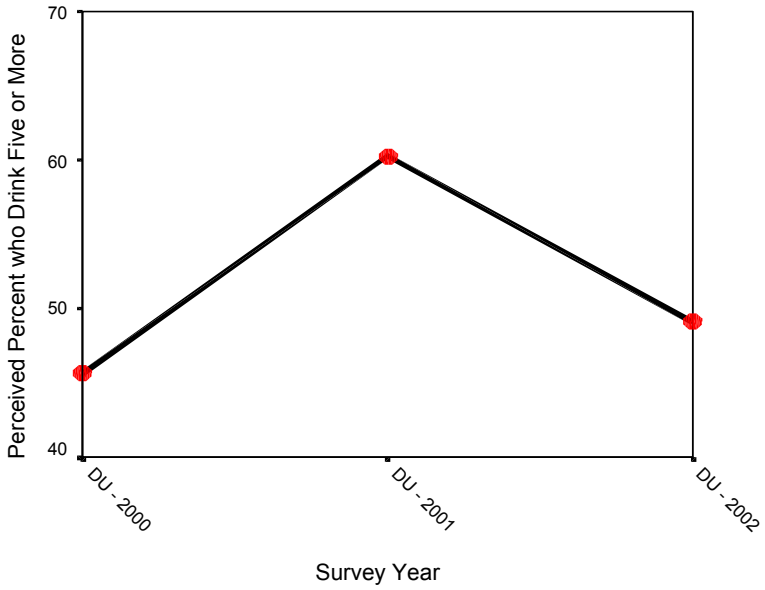
Figure 15: Perceived Frequency of Alcohol Use Among Other Students by Year



Similar reductions were found for estimates of male drinking ($F = 24.6$; df. = 2; $P < 000$), female drinking ($F = 7.39$; df. = 2; $P < .001$), as well as drinking in fraternities ($F = 46.8$; df. = 2: $P < .000$) and in sororities ($F = 19.3$; df. = 2; $P < .000$).

Additionally, while the perceived frequency of alcohol use declined by the third of the project, the perceived amount of heavy drinking, those students believing that most other students typically drink five or more in the past two weeks, experienced similar declines. After increasing from the baseline year to a level of 60 percent of the students perceiving that heavy drinking was typical, this figure declined significantly in the third year to its original point at the baseline year ($F = 36.8$; df. = 2; $P < .000$). Such a finding is consistent with social norms theory that predicts declines in perceptions particularly after extensive exposure to social norm messages.

Figure 16: Perception of Heavy Drinking on Campus
University of Denver



Women, more so than men, also experienced greater reductions in their perceptions of use on campus. As the next table indicates, women were more likely than men to significantly reduce their estimation of alcohol use among various groups.

Table 11: Perception of Alcohol Use by Gender by Year				
	Male		Female	
Frequency of Use	T. Value	P	T-Value	P
Friends	.30	.70	4.4	.00
Others Students	2.0	.03	5.6	.00
Male Students	1.8	.07	5.5	.00
Female Students	.15	.87	4.4	.00
Fraternities	4.1	.00	6.8	.00
Sororities	2.3	.01	5.2	.00

Female students tended to perceive a lowered rate of drinking by the third year of the social norms intervention than did males. There were significant reductions among women across all the above categories, while men perceived lower rates only among other students in general, fraternities, and sororities.

3. Impact on Alcohol-related problems

The final hypothesis examined in this study concerns the extent to which the social norm intervention produced an impact on alcohol-related problems over time. The survey instrument used throughout the study period assesses the frequency that students experience a variety of alcohol-related trouble such as performing poorly on exams, missing class, getting into arguments or fights, and driving while under the influence. While the first two sections of the results discussed in this report deal with alcohol use and perceptions of use, this final section will explore the influence of the social norming intervention on these behaviors.

First, it is useful to consider the degree that students in both groups experienced any problems over the three-year period. The following table gives the total percent of students at each school that did not report experiencing problems due to alcohol use.

Table 12: Percent of Students Not Experiencing Alcohol-related Problems		
	University of Denver	Colorado College
Variable	Percent w/out Problem	Percent W/out Problem
Hangovers	28	27
Performed Poorly on Test	71	74
Trouble with Police	83	76
Property damage	89	86
Get into a fight	66	67
Became nauseated	40	37
Driving while intoxicated	61	73
Missed class	56	68
Criticized by others	66	65
Drinking problem	84	83
Memory loss	60	56
Did something regretted	54	51
Arrested for DWI	99	99
Been sexually assaulted	85	88
Committed sexual assault	96	96
Tried to stop drinking	92	94
Thought about suicide	95	96
Attempted suicide	99	99
Been injured	81	76

As the above frequency table illustrates, in most cases, the majority of students in both the intervention and comparison groups do not indicate that they have experienced alcohol-related problems over the three years. This is not to minimize, however, the degree to which students do experience some negative consequences due to drinking. For instance, 40 percent of students at the University of Denver and 44 percent of those attending Colorado College report experiencing blackouts after drinking. Similarly, about 33 percent of students in each group indicate having been in a fight or argument after drinking alcohol, and almost 15 percent in each group report being sexually assaulted after drinking. Approximately 20 percent in each group indicate having been in trouble with the police after drinking. Thus, there is at least a moderate amount of negative consequences that students at both schools experience after drinking.

However, to what extent has the social norm intervention reduced the level of reported negative consequences? Examination of the negative consequences experienced by students in the intervention group over the three years suggests that the social norm campaign had little impact on reducing these consequences. Analysis of variance procedures conducted on the three years of data found no significant differences in any of the reported negative consequences. For the most part, the negative consequences reported by students remained stable over the three years.

There are, however, significant differences across the two sites with regard to negative consequences. Comparisons of the last two years of the intervention period reveal that

the comparison group had a higher rate of negative consequences in the following areas: experiencing hangovers ($T = 2.09$; df. = 1267; $P < .04$), getting into trouble with the police ($T = 3.45$; df. = 1266; $P < .000$), experiencing blackouts ($T = 2.14$; df. = 1259; $P < .04$), and being injured ($T = 2.61$; df. = 1250; $P < .009$). Students at the University of Denver, however, report experiencing a higher rate of missed class ($T = 4.96$; df. = 1263; $P < .000$) and performing poorly on an exam ($T = 1.98$; df. = 1267; $P < .05$) after drinking than did students at the comparison site.

Although there is some evidence that the social norming intervention reduced the level of negative consequences among students attending the University of Denver, the results of this analysis suggest this evidence provides only minimal support for stated hypothesis.

3. Interplay Between Process and Outcome Findings

The social norming intervention conducted at the University of Denver has produced mixed results. For instance, there is no clear and irrefutable data suggesting that the social norm campaign significantly reduced alcohol use on campus. In fact, by the end of the intervention period, the rate of at-risk drinking at the University of Denver had *increased* by about 10 percent from 49 percent in the baseline year to 54 percent in the final year of the intervention. This finding is in sharp contrast to the evidence from other social norm interventions documenting significant reductions in at-risk drinking. This lack of evidence supporting the effectiveness of the social norm intervention at the University of Denver may be related to the issue of believability that continued to plague the project. While the believability of the social norm messages increased in the third year from 46% to 51%, there was still strong reaction against the campaign. Over 70% of the students at the University of Denver in the third year of the intervention continued to see the campaign as a public relations ploy by the administration. The lack of credibility in the campaign led a great many students to reject the information that was disseminated (Granfield, 2002). Although the fidelity of the intervention was rated high, as discussed in the earlier section, the project team may have encountered more difficulty in getting students to respond favorably to the campaign. In the two years of the intervention, only 12% of the students at the University of Denver believed that the campaign had influenced their perceptions of alcohol use on campus, while only 2.5 percent of the students believed the messages affected their use. Just over a third of the students, 35 percent, reported that they were favorable towards the campaign. Subsequently, the poor student reaction toward the intervention itself may occur for the limited results.

However, while evidence of reductions in alcohol use was not present through the entire sample, there was a reduction in the frequency of alcohol usage over the intervention period. This was particularly the case among women at the University of Denver whose frequency of consumption decreased over the three years while the rate of consumption among women at the comparison site increased. The fact that the social norm campaign may have earlier effects on women has been suggested in the literature. Some recent social norms campaigns have reported a greater impact on women in their earlier phases (Odahowski & Miller, 2000; Usdan, 2003). This finding is consistent with research

suggesting that women's behavior is more influenced by environmental context than men's (Berkowitz & Perkins, 1986A; Berkowitz & Perkins, 1987B; Crandall et al, 2002).

Reductions in the perceptions of drinking were more evidenced in the data than reductions in drinking behaviors. Students at the University of Denver lowered their perceptions of the frequency of alcohol use on campus from 3 times per week to once a week. While there was an increase in the perception of at-risk drinking in the second year, by the third year, that perception had dropped to the level of the baseline year. Subsequently, while there is evidence to support the claim that there was a reduction in the perception of frequency, there was no evidence of reduction in the percent of the amount of alcohol consumed by students on campus.

Finally, the social norm campaign had minimal impact on the number of negative consequences associated with alcohol use. While there were slight differences between the intervention and comparison sites over the intervention years, the evidence does not point to clear and consistent support for this hypothesis.

F. COST ANALYSES

Original review of the CSAP cost analysis guidelines led us to believe that it would be difficult to conduct such an analysis of this project, which uses a universal prevention strategy involving a marketing campaign targeted at the entire undergraduate student body at the University of Denver. Therefore, in our Year 01 report we used a simple calculation based on the 1999-2000 undergraduate enrollment figure of 3,300 for total direct costs, which resulted in our estimate that approximately $37 was invested the first year for each undergraduate student at the University of Denver, with the potential for high returns in terms of behavior change.

Our results in Year 02 and Year 03, after conducting a thorough cost analysis, were surprisingly similar. We determined that the average cost per undergraduate student at the University of Denver was $27.95 per student for Year 01, $40.32 per student for Year 02, and $35.62 for Year 03, for a total average cost per participant of **$34.96**. (See Attachment H-5 for the complete Per Participant Cost Analysis.) In summary, it is clear that the social norms marketing model is an inexpensive approach that reaches a large audience.

Budget:

Year 01:
The budget for Year 01 of the grant was as follows*:
Personnel $19,000; Travel $5,560; Contractual $94,730 (Evaluator $35,900; BACCHUS & GAMMA Project Office $58,830); Consultants $3,870. Total direct costs were estimated at $123,326 and indirect costs at $2,645, for a total grant-funded budget of $125,971. The DU Wellness program director contributed .40 FTE in-kind, a value of $6,000. (In years two and three, the budget includes funding for this position.) The DU assessment office provided survey scanning in-kind, estimated as a savings of $800. The DU Office of Sponsored programs agreed not to charge an indirect fee during the first year, which saved the project over $15,000.

Year 02:

Year 02's slightly reduced budget (- $790) did not vary significantly from Year 01*. Direct costs were $121,971 and indirect costs $3,210, for a total of $125,181. Personnel increased from $19,712 to $23,260; Travel was reduced from $5,560 to $3,313; and Contractual increased from $94,730 to $95,398 (Evaluator $33,378; BACCHUS & GAMMA Project Office $54,820; DU Wellness Center $6,000; and DU indirect fees $1,200). The DU assessment office once again provided survey scanning in-kind, estimated as a savings of $800. The DU Office of Sponsored programs once again reduced its indirect fee, which saved the project over $8,000.

Changes from Year 01 involved a reduction in ADAD travel expenses, an increase in Project Director time from .20 FTE to .25 FTE due to a reassessment of the time required to carry out grant responsibilities, coverage of 20% of the DU Wellness Center's Coordinator salary, addition of a contractual college worker (40 weeks x 1 day per week @ $12 per hour) to assist the evaluator in conducting in-class surveys and preparing surveys for scanning, the addition of indirect fees paid to the University of Denver (waived during Year 01), food for Oversight Committee meetings, financial incentives for student stakeholders and DU peer educators, and the elimination of software, equipment and consultant expenses.

As in Year 01, the majority of the funds in Year 02 ($77,277) were used for project team salaries & fringe. The purchase of marketing materials, budgeted at $20,000, continued to represent the second greatest expense. An important, though minor, additional expense ($3,780) involved providing the food for stakeholder and oversight committee meetings and financial incentives to student stakeholders and peer educators.

Year 03

Year 03's budget remained the same as in Year 02, representing a reduction of $790 from the start-up year of the grant*. Direct costs were $122,102 and indirect costs $3,079, for a total of $125,181. Personnel costs were reduced from $23,260 to $18,905, for a total of $22,308 with fringe; Travel increased from $3,313 to $3,844; and Contractual remained at $95,950 (Evaluator $31,078; DU Wellness Center $7,230 and DU indirect fees $1,482 for a DU total of $39,790; BACCHUS & GAMMA Project Office $56,160). The DU assessment office once again provided survey scanning in-kind, estimated as a savings of $800. The DU Office of Sponsored programs maintained its agreement to charge .20 of the normal .44 indirect fee, which saved approximately $8,000.

Changes from Year 02 involved: an increase in Project Director time from .25 FTE to .30 FTE for the final year of the grant; the elimination of the Project Advisor salary; a small increase in Project Director travel to national college conferences; the addition of 20.5% fringe to the Wellness Center's Associate Project Coordinator salary; and an enhanced food budget for Stakeholder Committee meetings due to increased attendance. There were reductions in evaluator expenses for printing and copying and for the purchase of Core Surveys, since there were survey copies left over from Year 02. Items of significance that continued from Year 02 at the same level included financial incentives for student stakeholders and DU peer educators and the elimination of software, equipment and consultant expenses.

As in Years 01 and 02, the majority of the funds in Year 03 ($75,738) were used for project team salaries & fringe. The purchase of marketing materials, budgeted at $20,000, continued to represent the second greatest expense. An important, though minor, additional expense ($3,780) involved providing the food for stakeholder and oversight committee meetings and financial incentives to student stakeholders and peer educators.

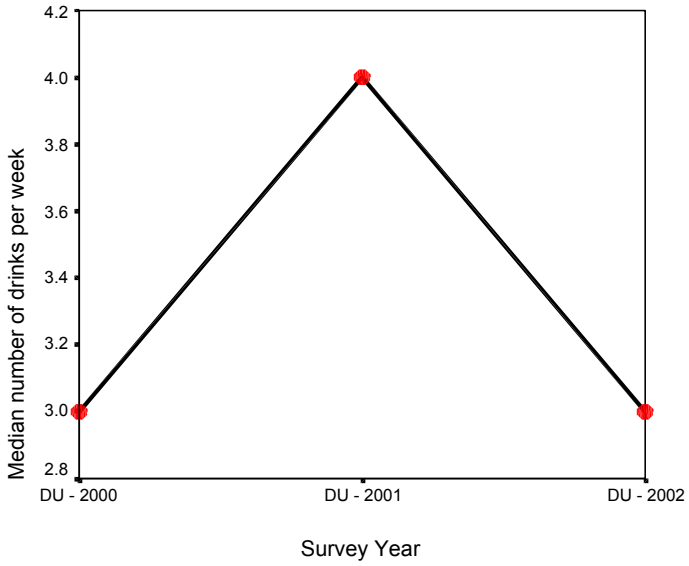
*Budget figures are quoted from the originally approved budgets. These are insignificantly different than the actuals, per Cost Analysis.

G. FINAL PROJECT REPORT CONCLUSIONS/RECOMMENDATIONS:

The aforementioned research report details the overall results from the social norming intervention at the University of Denver. That section of the report provides close analysis of the differences over the three-year period as well as differences between the intervention and comparison sites. The following section will utilize data analyzed in the above section to address final observations regarding this project.

Results from this research suggest that the social norming intervention conducted at the University of Denver had moderate effects on students. As demonstrated in figures 2 and 3 above, the amount of alcohol use among students attending the University of Denver increased from the baseline year. However, as demonstrated in figures 17 and 18 below, the median number of drinks per week at the University of Denver and at Colorado College demonstrates a significant difference. While the median number of drinks per week at the University of Denver increased from 3 to 4 between the baseline and Year 02, by year 03, the median returned to the original rate.

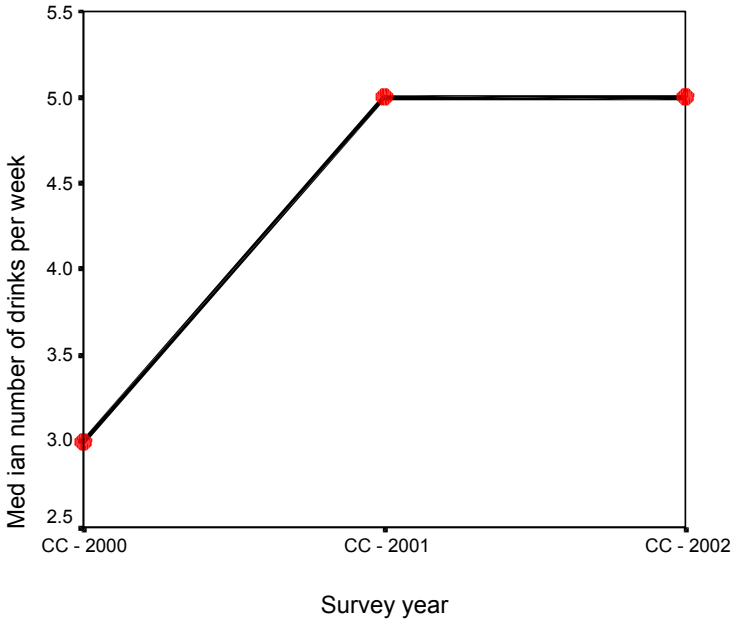
Figure 17: Median Number of Drinks per Week by Year
University of Denver



At the same time however, the median rate of alcohol use increased dramatically at the comparison site. As figure 18 demonstrates, the median amount of alcohol use per week at the

comparison site increased from three drinks per week in the baseline year, the same as at the intervention site, to 5 drinks per week in the Year 02 and Year 03.

Figure 18: Median Number of Drinks per Week by Year
Colorado College



The difference in the median rate of alcohol use between the two research sites is statistically significant ($F = 5.87$; df. = 1; $P < .016$). Thus, while the amount of alcohol consumed by students at the University of Denver did not change significantly over the three-year period, alcohol use per week (figure 18) and at-risk drinking (figure 4) showed significant increases within the comparison group. It might be inferred from this analysis that the social norm intervention at the University of Denver slowed the rate of increase in alcohol use among students. While the comparison site showed a statistically significant upward trend in alcohol use and at-risk drinking, students at the University of Denver, while fluctuating in their use during the intervention period, experienced more stable use of alcohol.

Although there was little change in the amount of alcohol used at the University of Denver, as figure 5 above demonstrates, the frequency of alcohol use declined. As illustrated in figure 6 above, this was particularly the case among women on campus. Female students experienced a reduction in their use from twice a week to once a week or less. This occurred as the frequency of alcohol use increased among female students attending the comparison school (see figure 9 above).

In addition to these statistically significant reductions in the frequency of alcohol use among women, there were significant changes in the perception of alcohol use among students in the intervention group. As predicted by social norm theory, there was a reduction in the perception of alcohol use at the intervention site while the comparison group experienced an increase in the perception of alcohol use on campus (see figure 12 and 13 respectively). There were significant reductions in the estimation of one's friends' alcohol use as well as in other groups of students.

Also, by the third year of the intervention, there was a reduction in the estimation of at-risk drinking at the intervention school. These reductions in perception occurred at the same time that increases in the estimation of drinking among non-intervention students were observed. Female students, more so than male students, experienced more widespread reduction in the perception of drinking on campus as demonstrated in table 11 above.

Finally, with regard to the reduction of negative consequences associated, there was little evidence of change resulting from the social norming intervention.

Data from this study suggest that the social norming intervention had a moderate effect on the lives of students attending the University of Denver. While overall drinking amounts were not lowered at the intervention site, the rate of drinking at the comparison site increased significantly over the three-year time period. Also, the frequency of alcohol use at the intervention site, especially among women, decreased while the frequency of alcohol use at the comparison site increased. The perception of alcohol use experienced similar patterns with students at the intervention site reporting lowered perceptions compared to those students at the comparison site.

It is unfortunate that there was not a reduction in the amount of alcohol use among students at the intervention site. The statistical patterns in the data suggest that, especially for women, students may be drinking as much as they did when the intervention began, but they are doing it less often. These students also generally believe that other students are drinking less often. This was the focus of the social norm intervention; to change the perception of use on campus so as to lead to changes in drinking behavior. There is partial support for this basic premise in the data analyzed for this report. However, this partial support should not be seen as insignificant. As an institution of higher education, the University of Denver falls into a category that has some of the highest rates of campus alcohol consumption in the country. It is a small, residential liberal arts university with a high visibility of both fraternities and athletics. This campus was selected for the intervention for precisely these reasons in order to test the principles of social norming on students who reside in a climate that encourages at-risk drinking. While there were some positive effects, those effects were only moderate. It might be that students attending campuses with a lower rate of high risk drinking would be more predisposed to accepting healthy normative messages. As discussed earlier in this report, at least half of the students did not believe the messages that were being circulated by the project staff. This lack of believability posed serious challenges for the social norm project team. However, it should be pointed out that believability increased during Year 03 despite the fact that there was a reduction in the dosage rate. This may suggest that while students didn't see the message as much as they did in Year 02, the consistency of the messages as well as the continuing attention to the issue of drinking on campus may have lead students to lower their perception of use.

Overall, the data are encouraging and suggest that in time and with continued exposure to social norm messages, students do modify their perceptions of the frequency of alcohol use on campus as well as lower their own frequency of alcohol use. As suggested in this research, and as evidenced elsewhere, some groups of students may respond to social norm efforts sooner than others. Like the recent evidence from Berkowitz (2002) and others (Odahowski & Miller, 2000; Usdan, 2003), women may be responding sooner to these programs than men. Future research

on the effects of social norming should investigate this potential gender effect with an emphasis not only on better understanding the empirical dimensions of this effect but also, and more importantly, to develop social norm messages and strategies that are better designed to alter the drinking behaviors of those groups of students that are more resistant to change.