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Program Evaluation • Consultation • Market Research

The Science Festival Alliance: Creating a Sustainable National Network of Science Festivals

Summary of Year 1 Findings



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Colleen Manning
Molly Priedeman
Rucha Londhe
Karen Peterman
Irene F. Goodman





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Introduction

Goodman Research Group, Inc. (GRG) is serving as the external evaluator of the three-year, NSF-funded Science Festival Alliance (SFA) project. First year data collection was completed in June 2010. It included:

- Surveys of 1,411 San Diego Science Festival (SDSF) and 1,054 Cambridge Science Festival (CSF) attendees;
- End-of-year focus groups with each of the festival (SDSF and CSF) team leaders; and
- An online survey of 11 principal Alliance team members.

The report is organized around four key questions:

1. Who participated in the science festivals?
2. What were participants' motivations for attending the festivals?
3. How did participants benefit from the festivals? and
4. How has the Science Festival Alliance developed in its first year?

Who participated in the science festivals?

What proportion of attendees was from the host cities?

The majority of participants at both festivals were from the host cities of Cambridge and San Diego, or close by. Nearly all of the San Diego attendees (93%) hailed from San Diego County. Three quarters of the Cambridge participants (74%) were from either Middlesex or Suffolk County. The high proportion of in-town attendees bodes well for the festivals' plans for year-round programming. In addition, these findings may serve as a springboard for Alliance discussion about any particular participation or outcomes goals for in- and out-of-town attendees.

How did attendees find out about the festivals?

There were not meaningful differences in the way in- and out-of-towners had found out about the festivals. However, CSF attendees as a whole were more likely than were SDSF attendees to have heard about their festival through word of mouth, flyers, and websites, while SDSF attendees were far more likely to have heard about their festival through schools. Alliance partners may benefit from hearing more about Cambridge's strategies around flyers and the web and about San Diego's school outreach.

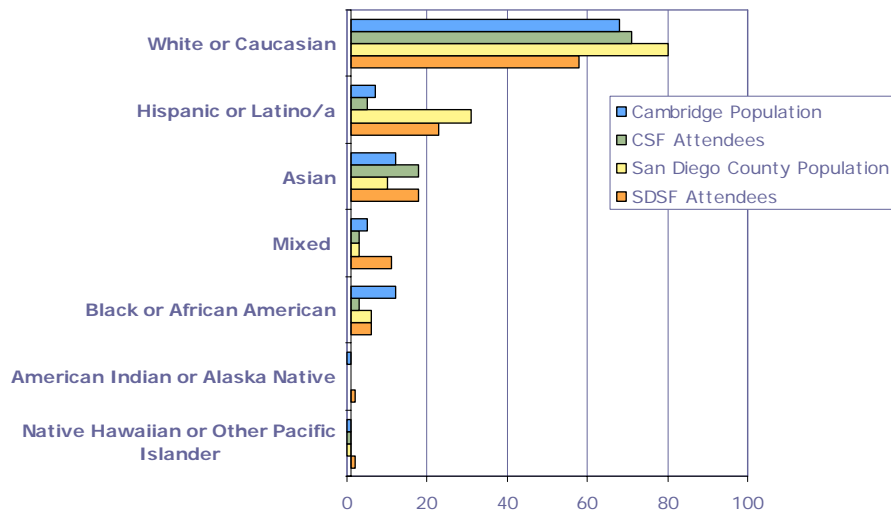
How and to what extent did the festivals reach underrepresented groups?

We used Census data to investigate the extent to which the “in-town” attendees of each festival represented the population of their host cities in terms of race and level of education, two variables that help identify underrepresented groups. See Figure 1. Overall, San Diego attracted a higher percentage of racial minorities than is represented in their population, including higher percentages of Asians and bi- or multi-racial individuals. The percentage of Hispanic attendees was somewhat lower than the percentage of Hispanics living in the area.

Hispanic attendees were more likely than others in San Diego to have heard about the SDSF through schools (63% Hispanic compared to 42% non-Hispanic), suggesting this is a particularly effective mechanism for reaching this underrepresented group. Hispanic attendees were *less* likely than others to have heard about the festival via newspaper or through work; if the SDSF isn’t already advertising in Spanish papers or workplaces, they might consider doing so in the future and other Alliance members with high Hispanic populations might wish to do the same.

Cambridge festival attendees were fairly representative of the population in terms of race; however, in future years an effort could be made to attract more Black or African American residents to more accurately reflect Cambridge’s population. The data do not hold particular lessons learned for reaching Cambridge’s Black or African American population; however, this underrepresented group was a lot less likely to have heard of the CSF through word of mouth; 20% of Blacks versus 40% of other racial groups had heard about the festival through word of mouth.

Figure 1
How Attendees Represented Population in Terms of Race

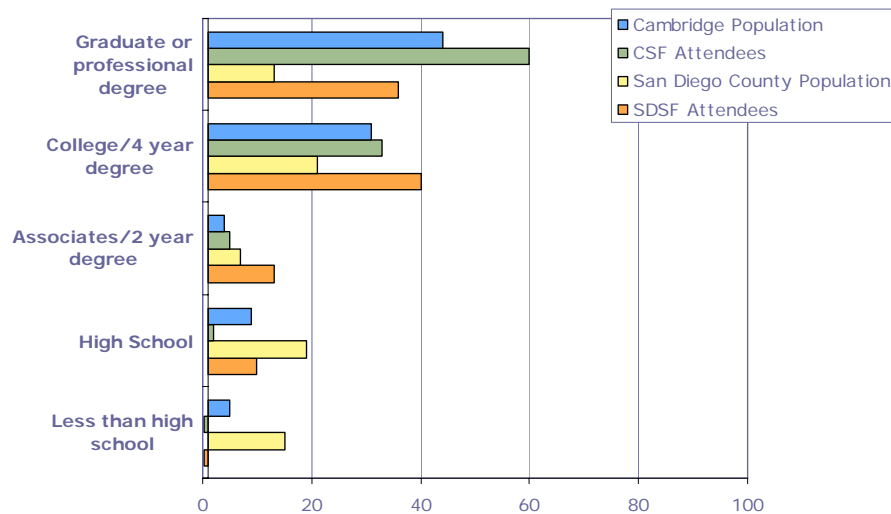


Source for population data: US Census 2008

Adult attendees (25 or older) were highly educated; over a third reported having higher than a college education. Census data suggests that both festivals attracted the more educated segments of their local populations and could benefit from discussion of how to attract residents with less formal education. See Figure 2. Through their children’s schools is one way; 34% of adults 25 and older without a college degree had heard about the festivals through schools, compared to 19% with a college degree, and 15% with education beyond college. Not surprising is that less educated adults also were less likely to have found out about the festival at work or through word of mouth.

In general, informal education institutions, such as museums, attract educated visitors. For example, 73% of 2004 Smithsonian museum visitors (including visitors to the National Air and Space Museum, the National Zoological Park, and the National Museum of Natural History) had at least a four-year college degree.

Figure 2
How Attendees Represented Population in Terms of Education



Source for population data: US Census 2008

What opportunity existed to provide “first ISE experiences?”

Most festival attendees already participated in informal science activities; over 80% reported having attended other science events or visited science centers in the year leading up to the festival. Similarly, 76% of attendees had had at least one chance in the previous year to interact with a science professional. These data may prove useful in specifying the Alliance’s stated objective of providing “a first ISE experience within the past year.”

What were participants' motivations for attending the festivals?

What proportion of attendees was motivated by an interest in science?

The greatest proportion of science festival event attendees (excluding the Carnival/Expo) was motivated by an interest in science. Half (49%) of attendees came to the events because they were interested in science in general and about half (46%) came because they were interested in the specific science topic (e.g., the science of cheese). Again, this may prompt further consideration of the Alliance's NSF impact indicator of providing a first ISE experience.

Most of those who were not particularly motivated by an interest in science were there because they had brought children (31%), for the entertainment value of the event (22%), or because they were there with a school or other kind of group (18%).

What motivated dominant versus underrepresented groups to attend?

The motivations of underrepresented groups differed slightly from those of dominant groups. Among adults over the age of 25, White attendees were more motivated by subject-specific interests than were attendees from other racial groups (52% compared to 43%) and more educated participants were more motivated by an interest in science (77% versus 63%).

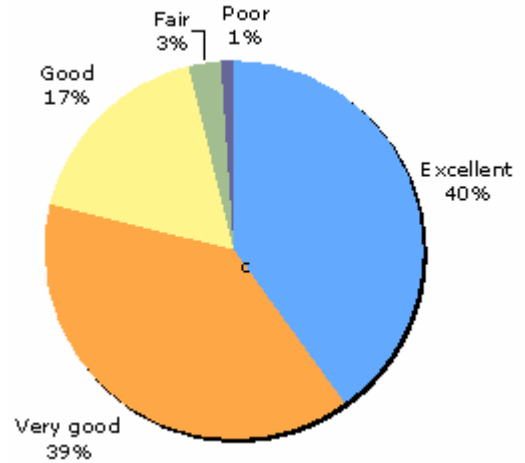
Compared to White attendees, attendees from other racial groups were more likely to have attended as part of a school trip, although not many attendees came for this reason (2% White compared to 7% from other racial groups). As pointed out earlier, schools appear to hold promise as an outreach mechanism to underrepresented groups.

How did participants benefit from the festivals?

What was participants' overall experience?

As illustrated in Figure 3, science festival participants had a high-quality experience. At 36 Cambridge Science Festival and 10 San Diego Science Festival events, a total of 1,358 attendees each chose three words to describe their experience. The “word cloud” below illustrates the results, with the size of the word corresponding to the frequency with which it was used. The public had a great time learning about science!

Figure 3
The Quality of the Festival Experience

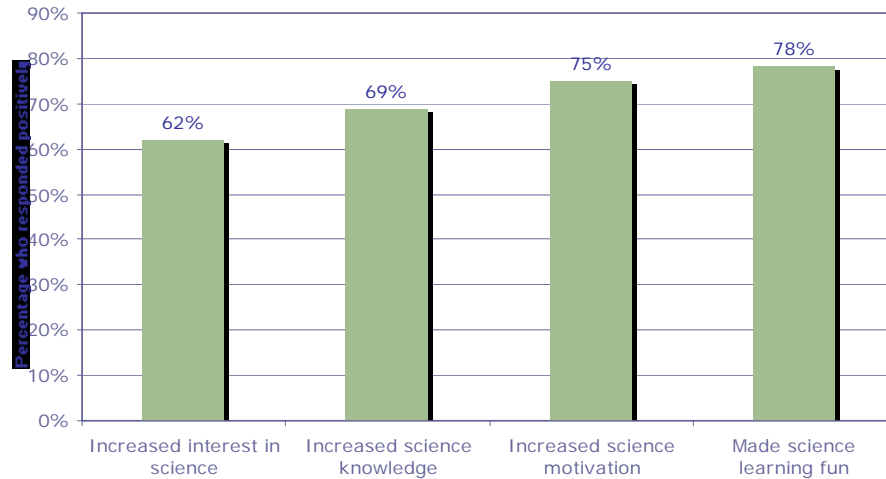


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What were the outcomes for participants?

Participants became more interested in science, learned something new about science, felt motivated to seek out more activities like those they had experienced at the science festivals, and experienced science learning as fun and enjoyable. Figure 4 presents these results.

Figure 4
How Participants Benefited from the Festivals



What factors helped or hindered outcomes for participants?

Two key features of the festivals facilitated these outcomes: interacting with a science professional and getting to handle and manipulate materials in order to learn about science. These features made attendees more interested in science, made science more fun, and helped them learn more about science.¹ In addition, doing hands on activities also improved one’s chances of returning to the festival, especially for attendees under 25. Attendees indicated on their surveys whether they had interacted with a science professional and whether they had completed a hands-on activity as part of their festival experience.

Figures 5 and 6 present these results for all attendees. However, the value-added of interacting with a scientist and doing hands on activities was even greater for younger attendees (under 25) than it was for older participants.

¹ Our approach to this analysis was regression, a statistical method that accounts simultaneously for multiple confounding factors. The factors that we examined included the location of the festival (Cambridge or San Diego), the type of event (Expo/Carnival or other), gender, age, education (for adults over 25), race (white or minority), interaction with a science professional in the last year, interaction with a science professional at the festival, and doing a hands-on activity at the festival. The effects reported here, therefore, are over and above any effects of the other variables included in the analysis. For example, the effects of interacting with a science professional at the festival are over and above any effect of interacting with a science professional in the last year. For the benefit of the reader, we have chosen to illustrate our findings using descriptive statistics rather than the actual regression results. The regression results are available upon request.

Figure 5
How Interaction with a Scientist Facilitated Outcome for Attendees

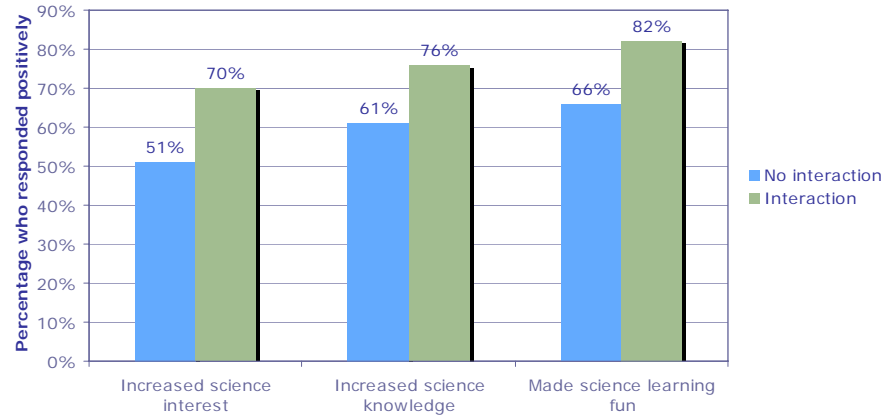
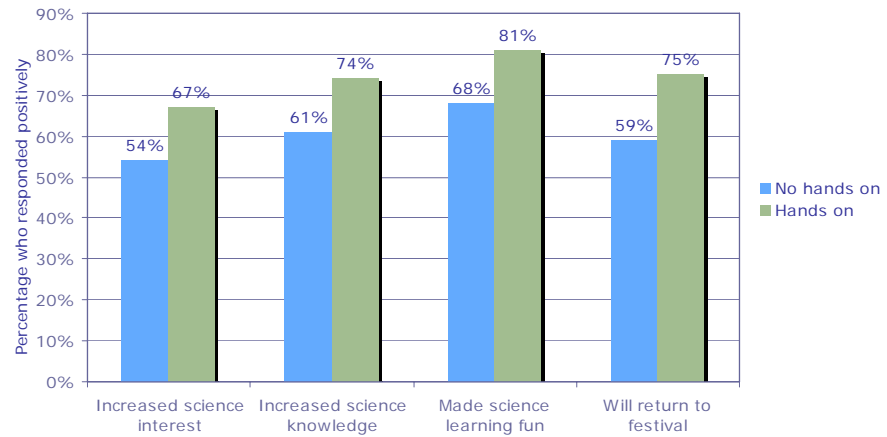
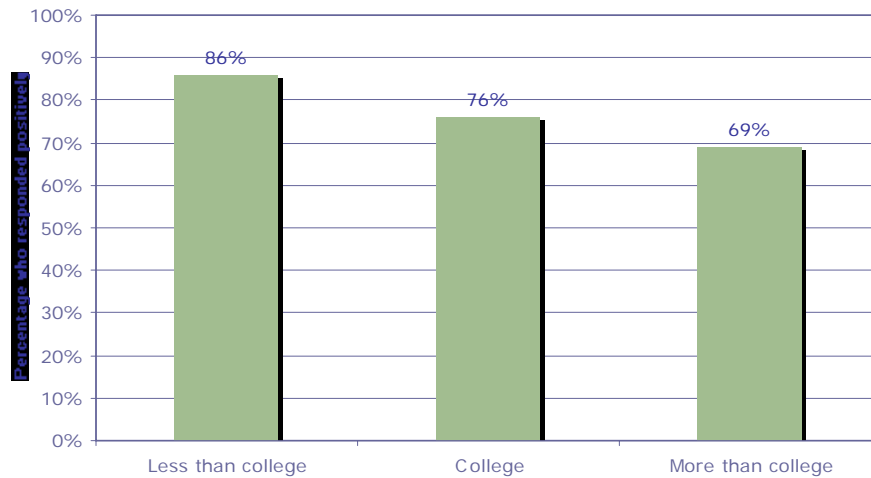


Figure 6
How Doing Hands-On Activities Facilitated Outcome for Attendees



These outcomes applied to a diverse group of attendees. However, among attendees 25 and older, the outcome of learning new science varied by education. It is perhaps not surprising that attendees 25 and older who had less than a college education learned the most from their festival attendance. See Figure 7.

Figure 7
How Education Related to Learning Science among Attendees 25 and Older



These results provide early indicators of the success of the SFA in achieving its impacts, including:

- increasing the awareness of families and adults of the role that science, engineering and technology play in their region;
- increasing and sustaining families' and adults' engagement in science, engineering, and technology learning opportunities in their region; and
- increasing the opportunities for families and adults to interact with science professionals in their region.

How has the Science Festival Alliance developed in its first year?

Developing Leadership and Infrastructure

The results of our survey of Alliance partners, our focus groups with the CSF and SDSF teams, and our participation in SFA meetings throughout the first year indicate that the baseline strength and early progress of the Science Festival Alliance has been good, with a solid foundation for growth. Table 1 highlights the Alliance's major accomplishments in its first year.

In the beginning of the year, the Alliance focused on developing leadership and infrastructure and branding, naming, and promoting the Alliance. Promotion strategies included developing a web site and leveraging national conferences, such as AAAS and ASTC. Festival issues in the early phase centered on obtaining sponsorship and pinning down dates and venues for opening events. The group is also readying a document library with sample budgets, agendas, planning documents, etc. It has collected many of these documents, and is currently working to make them publicly accessible.

Table 1
Key Milestones Of The Science Festival Alliance: June 2009-June 2010

| | |
|----------------|---|
| June 2009 | ➤ National Science Festival Network (NSFN) kick-off meeting in San Diego |
| July 2009 | ➤ First monthly conference call |
| August 2009 | ➤ NSFN Sub-committees created |
| September 2009 | ➤ NSFN advisory committee list prepared |
| October 2009 | ➤ NSFN program manager appointed ➤ NSFN renamed Science Festival Alliance (SFA) |
| November 2009 | ➤ Bay Area SF appointed new staff ➤ Website planning underway |
| December 2009 | ➤ SFA logo finalized ➤ SFA in-person meeting in Cambridge |
| January 2010 | ➤ First draft of evaluation plan and instruments submitted ➤ SFA sub committees revisited ➤ SFA Website content ready for comment |
| February 2010 | ➤ Science Festival director appointed at Franklin Institute ➤ SFA presentation at AAAS annual meeting ➤ Second draft of evaluation instruments submitted ➤ sciencefestivals.org website finalized and launched ➤ Festival directors conference calls launched |
| March 2010 | ➤ San Diego Science Festival held |
| April 2010 | ➤ Year 1 report submitted to NSF |
| May 2010 | ➤ Cambridge Science Festival held |

Sharing a Vision and Working to Clarify Goals and Model

Alliance team members share an overall goal for their Science Festival Alliance and are eager to further delineate their aims, as expressed by one partner: *“The fundamental goal of the SFA is to support and expand science festivals throughout the nation. More and better is the motto. Within this, there are many sub goals that are not clear.”* Members also are eager to discuss more specifically the long-term goals. As one partner observed, *“The actual long term goals of the Alliance and how it will achieve those goals seems nebulous at times.”* These discussions go hand in hand with clarifying a growth and sustainability model for the Alliance (for after NSF funding). This is the important work of the coming year as it is vital to sustaining Alliance infrastructure.

Providing Support for One Another and Clarifying Team Functioning

The SFA manager has provided strong support for Alliance members. Likewise, those Alliance members who have sought support from one another have found it very helpful. As it moves ahead, the Alliance will benefit from attention to clarifying the roles and responsibilities of each member organization and, within each organization, the roles and responsibilities of individual team members.

Clarifying the unique strengths that each member organization brings to the Alliance would be a helpful first step to responding to what one partner described this way: *“While we have informally all committed to participating in the SFA,*

no clear commitment from each founding partner has been outlined.” In moving forward on these issues, it is especially important to have very clear definitions of the roles of the three full-time positions – the SFA Manager and the two new festival directors.

Clarity of team functioning will be an essential lesson learned to pass on to new festivals. It also may help jumpstart subcommittees formed in the first year. Distributing the work and leadership of the Alliance is another crucial element of sustainability.

Participating in One Another’s Festivals and Sharing Successes

Perhaps the single greatest strategy that united members in this first year was traveling to and participating in one another’s festivals. This is highly recommended for new festival organizers. It provides them with a menu of different models and activities and also creates a shared experience. It also helps keep the seasoned organizers energized about their work and in touch with the greater purpose and worth of the Alliance. The biggest successes of the festival events from Alliance team members’ perspectives were the programming itself, the attendance, and the positive experience of attendees.

“Good turn-outs and happy people, creative and captivating content”

“Each [event] was different in [its] success. Some were successful because they furthered a relationship with an ISE organizations, others because they had excellent content, others because they drew a large audience.”

“Attendance numbers, content, smoothness of planning”

“The overwhelmingly positive public and exhibitor response to the entire vision and format”

“[The Big Ideas for Busy People event] lived up to my expectations, which is really unusual! I thought it was fantastic.”

“Some of the biggest successes [were] events that create[d] a sense of serendipity.”

Two key indicators of the strength and success of the Alliance in Year 2 will be the implementation of the Philadelphia and San Francisco festivals. Studying these implementations will move the evaluation discourse beyond the Cambridge and San Diego community-based outcomes to include systems-level outcomes.

Summary

In summary, the SFA has developed partnerships and processes upon which to build a model of sustainability, and findings from the Cambridge and San Diego festivals indicate that the Alliance is making progress toward achieving its intended impacts for families and adults. A deeper shared understanding of the work, manifested in active and productive committees, will position the Alliance to capitalize on opportunities and effectively respond to challenges.

Goodman Research Group, Inc.

Main Office

955 Massachusetts Avenue, Suite 201
Cambridge, Massachusetts 02139

Tel: (617) 491-7033

Fax: (617) 864-2399

info@grginc.com

www.grginc.com

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