ATTENDANCE AT SCIENCE CENTERS:
TRENDS FROM 2002 - 2011

Charlie Trautmann and Christine Ruffo

Introduction
Why should science centers care about attendance trends?

The answer is simple. While educational impact is our goal, our business models typically rely on 60-90% earned income that is closely related to the number of guests coming through the turnstile during the course of a year. The income categories related to this earned income include ticket sales, gift shop sales, food sales, program fees, plus indirect items such as memberships. In addition, while expenses at science centers are largely fixed in the short term, much of our other income is variable and depends directly or indirectly on attendance.

The Association of Science-Technology Centers (ASTC) has tracked attendance trends for more than three decades. The early data were based on annual surveys and provided a useful snapshot of attendance. In general, the 80s and early 90s were characterized by gradual attendance growth, as many new museums came into being and existing ones expanded. Blockbusters, such as robotic dinosaurs, began to appear, and a growth spurt for the science center field was in full swing.

About 10-15 years ago, several observers began to notice that the growth curve seemed to be flattening. In 2001, amid heightened concerns over the effects on science centers of the September 11th attack on the World Trade Center in New York City, ASTC began to track monthly attendance for its governing members. ASTC monthly attendance data are segmented into three categories: U.S. centers with less than 50,000 square feet of exhibits, U.S. centers with greater than 50,000 square feet of exhibits, and all science centers worldwide. The monthly attendance from ASTC’s governing members is, however, somewhat sporadic, and complete long-term datasets for a given science center, with no missing months, are the exception rather than the rule. The trends since 2002 are shown in Figure 1.

After watching several years of these monthly attendance data, observers from ASTC’s Research Advisory Group and others noticed that there seemed to be a general flat or even downward trend, especially for both the larger U.S. and all non-U.S. science centers. Knowing that such a trend over the long term would not serve the field well (particularly because of its heavy reliance on earned income), several leaders in the field began to discuss the trends and invite commentary. The Informal Learning Review, for example, published commentaries on attendance by ASTC President Bryce Seidel (ILR #111) and further discussion by John Jacobsen (ILR #112) and Emlyn Koster (ILR #113). ASTC discussed attendance trends at its international governing member retreat in London in March 2012, and the Association of Children’s Museums included attendance trends in the opening session of its three-year “Reimagining Children’s Museums” initiative in June 2012.

In late 2012, ASTC undertook a more comprehensive survey to collect consistent, high-quality data from each museum, compiled by one individual and in the same way at each museum. Because the prime interest was in trends rather than absolute numbers, science centers were asked to measure their total onsite attendance in whatever way they normally did so, as long as they were consistent over the study period 2002 to 2011. The survey collected the following data:

- Museum name and type
- Attendance by year, 2002 - 2011
- Interior exhibit space square footage
- Dates for openings of new buildings or major expansions
- Dates the institution hosted a major blockbuster exhibition (e.g., BodyWorlds)

ASTC Survey Results
In November 2012, ASTC asked its science center and museum members to submit annual on-site attendance data for calendar years 2002-2011. One
A hundred fifty-five of ASTC’s 482 science centers and museums members responded; 107 of those provided data for all 10 years. Of those institutions, 90 are located in the United States. The smallest institutions were underrepresented—centers with operating budgets under $1 million constitute nearly one-quarter of ASTC’s membership but represented only 11% of respondents.

Total on-site attendance increased for most of the decade (Figure 2), a good sign that the reach of the science center field as a whole has grown. Based on the available data, attendance for the 107 reporting museums grew 24%, from 39.0 to 48.3 million visitors from 2002-2011, peaking during 2009-2010. This corresponds to a compound growth rate of 2.4%, but it’s difficult to predict whether this pattern will continue for the field as a whole.

Looking at all 107 respondents together, the pattern for median attendance, which is a better indicator of how individual institutions are faring, is similar, with a growth of 29% from 2002 to 2011, or 2.9% annually. When disaggregated by institution size, however, significantly different patterns emerge (Figure 3). The size categories are Very Small (<12,000 square feet of exhibit space), Small (12,001-25,000 square feet), Medium (25,001-50,000 square feet), and Large (>50,000 square feet).

Over the study period, very small institutions saw the highest increase in attendance (72% overall), while large institutions showed the lowest and ended up essentially flat over the study period (2.4%).

After spiking in 2004, the median attendance for small institutions decreased through 2007, even though that group’s total summed attendance had still increased slightly during those years. Median attendance climbed again from 2009 to 2011 to end 16% higher than in 2002. The reason for the 2004 spike is not yet clear.

The median attendance for medium institutions grew steadily during the study period, ending up 41% overall.

---

“Attendance,” continued on following page
In addition to providing total on-site attendance, participants indicated which years they opened a new building or major expansion and/or hosted a major blockbuster exhibition. That information, broken out by institution size, is provided in the graphs below.

Analysis of the Results
To analyze the trends at the institutional level, we have used medians rather than means because they are less affected by outliers in the data.

Attendance trends: The slow downward trend in aggregate attendance during the past two years (Figure 3, black line, all respondents) coincides with the global economic crisis that began late in 2008, and it is likely that economics has played a significant role. Large institutions, however, constitute the only group that saw a significant decline in attendance during this time period. In contrast, attendance at small and medium centers appears to be on the rise. And while the trend is somewhat variable, attendance at very small centers was higher in 2011 than for all other years except 2010.

Without additional data, it is difficult to explain the attendance patterns for the different size groups. A higher percentage of very small institutions reported opening new centers or major expansions in 2003, 2005, and 2006, which could account for a portion of that group’s steep increase in the first half of the decade.

Effect of expansions: Opening a new building or major expansion appears in the majority of cases to increase attendance in the years following an opening, as compared to the years prior to it. Typically, attendance spikes immediately after expansion and then decreases after the first year or two following a grand opening. The data indicate that the number of centers expanding has decreased significantly, from 8% of respondents per year expanding in 2002 to only 4% per year in 2011. The data do not indicate, however, whether any increases that did occur met the expectations of the expanding museums.

Effect of blockbuster exhibitions: More large centers reported hosting blockbuster exhibitions, such as BodyWorlds, in 2005-
Blockbuster exhibitions usually bring significant increases in attendance. It is not clear, though, how long the increase persists. Within this dataset, results were mixed when comparing attendance the year after a blockbuster exhibition to the year before it. Blockbusters also bring high expectations for attendance and revenue, though the data don't tell us whether the blockbuster attendance bumps met the expectations of the host museums. It is interesting to note that the number of blockbuster exhibitions peaked in 2006 and has gradually dropped over the past five years, from 20% of respondents hosting a blockbuster in 2006 to only 16% in 2011.

Further Possible Influences on Attendance

In addition to the influence of expansion of space and blockbusters, other internal and external factors can influence attendance.

Internal Influences. Internal influences are factors over which individual science centers have control. The quality of exhibits, rate of exhibit turnover, marketing, quality of guest services, amount of museum floor programming, and guest amenities such as cleanliness and signage all affect guest traffic. Interestingly, a study of 40,000 science center members by Reach Advisors (2008) found that only 8% of respondents felt that the staff at science centers cared about them as people. This finding identifies a significant opportunity to improve attendance through enhanced customer service. Many museums are discussing the level of exhibit turnover necessary to maintain repeat visitation, but few hard data are available.

External Influences. External influences refer to variables over which science centers have relatively little or no control, such as the economic climate, demographics, competition, changes in society, or changes in roads or other key access points. Museums also have relatively little control over the flow of new commercial blockbuster exhibitions and large-format films, which affect primarily medium and large centers.

In the United States, the general population's demographics are shifting, skewing older and becoming more racially and ethnically diverse. According to U.S. census data, the number of children ages 0-14 has been falling for many years, as has the percentage of white children within that age group. Since children represent the primary audience for science centers, the implications for attendance of a declining audience pool are significant.

With median age increasing, should science centers broaden their age appeal? If incomes are down, should centers provide more affordable programs? If the ethnic mix is shifting, how can centers improve their practice to meet the needs of a more diverse and changing local audience? In general, science centers must learn to adapt quickly to changing conditions by providing experiences that best attract and serve the needs of their local audience.

Next Steps for Science Centers

1. Continued monitoring by the field will be important, to determine if recent decreases in on-site attendance, especially for large centers, represent the start of a long-term downward trend.

2. The relative effect of internal and external factors varies from museum to museum. To our knowledge, there has been no systematic attempt to collect recent, high-quality data, isolate key variables, perform a rigorous regression analysis, and determine which factors play the greatest role in determining attendance. Such a study would be of immense value to the field.

3. Tracking external influences is critical at the local level. How are community demographics changing? Who are the competitors for leisure time in our communities? Identifying these influences should help science centers develop strategies to best serve their communities and bring more people through our doors.