

Assessing Museum Impact: From Theory to Practice
Summary Report

By:

John W. Jacobsen, Laura Roberts, David W. Ellis, George Hein and Lynn Baum

With gratitude for the support of the New England Museum Association
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Abstract

Museum administrators need measurements to prove their museum's value, to advocate for their institutions, and to improve their performance. The purpose of the two-year *Assessing Museum Impact* (AMI) pilot research project was to explore in practice the theory that the use of data can help museums improve their impact (effectiveness) and performance (efficiency). The project was designed to assist six mid-sized New England museums to select data using the *PIID Sequence* and then to use that data strategically. The participants reported positive impacts on their management culture and actionable enhancements to their museums. All plan to continue using data strategically. There is still a long way to go from these small steps, and the authors propose that other museum associations join NEMA's lead in supporting and disseminating these findings.

This report describes the need, relevant prior work, research process, and the findings that may be useful in building capacity for incorporating data that may indicate impact in museum administration, planning, advocacy and fund raising.

1. The need for museums to use data strategically

Bill Gates says “I have been struck again and again by how important measurement is to improving the human condition. You can achieve amazing progress if you set a clear goal and find a measure that will drive progress toward that goal in a feedback loop (Gates 2013).” Museums now have to compete for support against other organizations that do measure their impacts and demonstrate their social good.

The museum field, still shaking off its legacy of inwardly-focused, autonomous privilege, faces critically important questions: What are museums contributing that is important? How are they addressing critical social problems? Why do museums struggle to measure the value of their contributions? How do museums break through the obstacles to use carefully selected metrics to convince skeptics and help museums evidence their value?

In the 1990s, the Institute of Museums and Library Services (IMLS) estimated there were 17,500 museums in the United States alone. The number of U.S museums has clearly grown during the museum boom (1980's – 2008), perhaps to around 22,000 to 25,000 museums (Jacobsen 2017, 181), most of them small, some of them very large. Globally, the number of museums continues to grow, most dramatically in China.

In the U.S., however, that boom is over. Who survived? Who may not continue to survive? It is exciting to build a museum but challenging to sustain its operation. How many museums can our economic, educational and cultural ecosystems support? Sustainability will depend not only on delivering important benefits, but also on the ability to measure impact and performance, and on constantly adjusting a museum's mix of services to respond to changing needs.

All nonprofits are facing pressure to account for their impact, as outlined in a 2010 Harvard Business School working paper on the limits of nonprofits:

The world of nonprofit organizations, philanthropy, and social enterprise has been preoccupied with two powerful mantras in recent years. Since the early 1990s, the refrain of 'accountability' has been ascendant, with demands from funders, taxpayers, and concerned citizens and clients for nonprofits to be more transparent about their fundraising and spending, how they are governed, and what they have achieved with the resources entrusted to them. A more recent manifestation of this discourse has centered on the mantra of 'impact' or demonstrating results in addressing complex social problems such as poverty and inequality. (Ebrahim and Rangan 2010).

The philanthropic sector now demands metrics through donor-funded initiatives like Charity Navigator's rating system that focuses on "the two most important questions ever to face the sector: how to define the value of all the work we are doing, and how to measure that value... [in pursuit] of how to identify high-performing nonprofits and how to better direct donors' contributions to them." (Berger, Penna, and Goldberg 2010). In addition to their ratings based on fiscal metrics, Charity Navigator is working on approaches based on measuring impact.

Museums and their stakeholders have been using key performance indicators (KPIs) to monitor progress for years (Legget 2009), (Persson 2011). KPIs in common use include a wide range of measures such as energy costs per square foot of building, the ratio of adult to child admissions, the percentage of the collection on display, or the number of visits per membership.

These familiar calculations use operating, resource and market data to help management monitor trends and pursue objectives, but they are seldom systematically linked to measure impact and performance. A careful selection of KPIs can be like the many gauges on the dashboard of an airplane's cockpit that pilots use to fly safely to their destination. In order to fly where it wants to go, a museum needs to integrate and prioritize its KPIs to understand what they say collectively about where the museum is headed and how that relates to where it intends to go and where it wants to make progress.

The Cultural Data Project's (now DataArts) 2013 analysis by Sarah Lee and Peter Linett of the use of data in the cultural sector, which includes museums, performing arts and other cultural nonprofits, found that:

We face an abundance of data about the cultural sphere. But it is not yet clear that the cultural sector is making effective and strategic use of all of this data. The field seems to be approaching an inflection point, where the long-term health, sustainability, and effectiveness of cultural organizations depend critically on investment in and collective action around enhancing the field's capacity for using data strategically and thoughtfully to inform decision-making. (Lee and Linett 2013, 1)

Lee and Linett also found that the cultural sector needs to address "The lack of a strong organizational vision for how data can be used to inform internal planning and decision-making, as well as the lack of examples of such vision from the field" (Lee and Linett 2013, 2).

Museums are not alone in this, just behind. Museum leader and former interim director of the IMLS Marsha Semmel says "Much more needs to be done to provide a fully textured analysis of – and case for – the public value of museums in the United States." (Semmel and Bittner 2009, 285).

There is no lack of potentially relevant data – there are decades of evaluation studies, museum operating data, financial reports, museum sector surveys and government forms. The DataArts' report also found issues with non-standardization of data definitions, which means all these data cannot be aggregated and compared easily.

Because we have so many impacts, audiences and supporters, because every museum is unique, and because each museum pursues its individual missions differently, the global field of museums has no commonly accepted metrics to measure impact and performance. Our richness

and complexity challenge any simplistic assessment of a museum's value and impact, such as attendance or collection size.

The late museum sage Stephen E. Weil recognized that in the wide variety of potential outcomes available to a museum lies complexity:

What this complexity suggests is that, over time, the museum field will need to develop a vast arsenal of richer and more persuasive ways to document and/or demonstrate the myriad and beneficial outcomes that may occur for their individual visitors and have impact on the community beyond. Some of these ways may be quantitative but, to the horror of some social scientists, a great many may be anecdotal or qualitative. What is critical is that these evaluation techniques fit the real complexity of what museums actually do. (Weil 2003, 53).

To address this complexity, the museum field will need to develop and evolve frameworks for thinking about and monitoring its complex mixture of outcomes, audiences and supporters. These frameworks must, of necessity, be aligned with how the rest of the world thinks about value, and ideally be aligned with museum counting and accounting systems and, in time, with shared data definitions.

2. Relevant prior and current work

Fortunately, many actual and suggested ways of thinking about and measuring museum impact now exist in the global literature, museum practices and museum associations as well as in existing demographic and social data. There is considerable international research on learning in informal settings. *Learning Science in Informal Environments* (Bell, Lewenstein, Shouse, and Feder 2009) is an excellent aggregation of knowledge about informal STEM (science, technology, engineering and mathematics) learning in museums and other non-school settings. Studies have been conducted on the impact of museums on their audiences, communities and economies, (Bradburne 2001), (Garnett 2001), (Science Centre Economic Impact Study 2005), (Museums Association 2013).

At least three scholarly journals have devoted issues to museum public value and economic factors: *Journal of Museum Management and Curatorship* 24(3), September 2009; the *Journal of Museum Education* 35(2), Summer 2010 and 35(3), Fall 2010; and *The Exhibitionist* 31(2), Fall, 2012. Museum analysts such as Colleen Dilenschneider

(<https://www.colleendilen.com/the-data/>) help museums understand trends and current issues from aggregated data about museums, which may help them better understand their own data.

While there were previous efforts to establish frameworks for museum evaluation (Anderson 1997), (Baldwin 2011), (Sheppard & Falk 2006), (Friedman 2007), the data infrastructure to support such frameworks has not been in place until recently. Achieving this goal is now possible because of: increased transparency of museum operating data (Anderson 2004), (Stein 2009); the growing body of evaluation findings and evidence posted on <http://www.visitorstudies.org/> and <http://informalscience.org>, and new national data compilations of museum operating data, such as the Association of Children’s Museums’ (ACM) online database, DataArts, Guidestar’s collection of IRS 990 data forms, and other on-line museum data. The Collaboration for Ongoing Visitor Experience Studies (COVES) is a museum-based series of specific questions that provides templates to help museums collect meaningful data about their visitors to inform decisions and relevant points of comparison with peers (<http://www.understandingvisitors.org/about/>).

This discussion about a museum’s value is also a discussion about a museum’s impact. As Weil observed, the value of a museum lies in its contributions: What impacts did the museum achieve this year? For whom? And at what cost/value to whom? How has it changed someone’s life? How has it changed its community? How does one measure the value/impact of a museum as a whole?

A. Museum Theory

The process to answer such questions should be based on a conceptual framework for all museums, beginning with the concepts and assumptions about what museums are, why they exist and for whom. People and organizations pay money, spend time, and make efforts to engage with a museum in return for the impacts and benefits they receive. The cumulative time, effort and resources that a museum’s audiences and supporters provide in exchange for the benefits they get from the museum is one indicator of its value to its stakeholders.

Any discussion of US museums’ value to their communities can learn from the work of John Cotton Dana, an early advocate for the idea that museums should be useful, meeting the needs of their communities. In describing his efforts to create a museum for the city of Newark, NJ, he wrote that the museum, supplementing the museums of New York City, “should be

adapted with special care to the needs of the people of Newark; through careful study it should be made something the people of Newark would use and, using, would find pleasure and profit therein.” (Peniston 1999, 24). Many museums in the 21st century continue to look for concrete ways to improve the community through supporting public education (American Alliance of Museums 2014), economic development (American Alliance of Museums 2017), and other services. This notion of utility, that museums are responsible for offering members of their communities services that address their needs and aspirations, has evolved to a wider discussion of museums’ relevance and social value. For example, the contributors to the Empathetic Museum collaborative (<http://empatheticmuseum.weebly.com/about.html>) argue that “the empathetic museum must have a clear vision of its role as a public institution within its community. From this vision flow process and policy decisions about every aspect of the museum--audience, staffing, collections, exhibitions and programming, social media, emergency responses--all the ways in which a museum engages with its community(ies).”

Weil posited that a museum’s worth depends on the good it accomplishes, and the museum’s resources (e.g. its collections, facilities) and activities (exhibitions, programs) are the means to that end. The critical performance evaluation is then of the museum’s effectiveness at achieving its purposes and of the efficiency of its resource use (Weil 2002), (Weil 2005). The current thinking about impact extends beyond the impact museums may have on one individual to consideration of the broader social impact of their work. The Oakland Museum of California, for example, thinks about the impact of its work as “positive change [we’re] able to enact for individuals and groups. It’s not what we do or why we do it, but the effect of what we do. And because we’re grounded in a particular community, we’re defining social impact as local change to people in our surrounding community and, perhaps down the road, the change we affect on people across all of Oakland.” (McKinley 2017). Others have drawn on Mark Moore’s work on public value (Moore 1997) to ask about the public value created by museums rather than looking simply at the value of individual visits (Scott 2013), (Munley 2010).

Beverly Sheppard and John Falk built on the work Falk did with Lynn Dierking on learning that meets personal and sociocultural needs (Falk and Dierking, 2000, xii), (Falk and Dierking 2012, 33) to consider the place of consumer choice in a competitive marketplace (Sheppard and Falk 2006). No one has to visit museums. No one has to give them money. This is a fundamental difference in the kind of business model required for most American non-profit

museums from schools and other formal educational institutions and from government-funded museums in the rest of the world. Most independent US museums have to attract visitors and provide valued benefits to their audiences and supporters to thrive. Colleen Dilenschneider pushes this observation about the economic reality of museums' place in the market when she observes: "Your organization can determine importance, but the market determines relevance...it's quite common that cultural organizations will declare that something (some content or issue, for instance) is important. However, if nobody cares about that 'important' thing, then it's difficult – if not impossible – to educate, inspire, or initiate support." (Dilenschneider 2016.)

The final theoretical plank begins with George Hein's proposal that in democratic societies, museums should promote democratic values. Guided by John Dewey's concepts of the role of education in a democracy, he argues that museums need to embrace the significance of progressive education practices (now usually called "constructivism") and promote the mission of building a better and more democratic society (Hein 2006, 349). These ideas have evolved into quite specific initiatives to improve community. For example, David Fleming has advocated that museums focus on human rights issues (Fleming 2015). The collaborative venture, Mass Action: Museums as Sites of Social Action asks: "What is the role and responsibility of the museum in responding to issues affecting our communities locally and globally? How do the museum's internal practices need to change in order to align with, and better inform, their public practice? How can the museum be used as a site for social action?" (MASS Action n.d.)

These conceptual foundations have implications for today's museum leaders:

- To be useful, museums need to understand the needs of their communities and be structured to address those needs.
- To have an impact, and create public value, museums should understand that their vast resources (means) need to be deployed to achieve their purposes (ends) and be evaluated on how effectively and efficiently they do so.
- To be successful in a competitive marketplace, museums must offer experiences and services their audiences and supporters find valuable and relevant.
- To make the world better and more democratic, museums need to aspire to larger, more ambitious goals.

Synthesized, these concepts underlie museum economic theory: The community funds the museum to use its resources to provide effective services back to the community. The museum provides these services efficiently and, instead of privatizing its net revenues, contributes to community development and social good.

3. AMI Project methodology

These needs, theories and approaches were developed in John Jacobsen's book, *Measuring Museum Impact and Performance* (Jacobsen 2016), which was in discussion among the authors in 2017. The authors of this paper, including Jacobsen, decided that the approach could be explored in practice with a small network of nearby museums. Out of this collegial initiative, the *Assessing Museum Impact* pilot research study was organized and proposed to the New England Museum Association (NEMA) later that year. NEMA accepted the proposal with a few modifications, which was then formalized in a Memorandum of Understanding (MOU) that governed the relationship between NEMA and the authors.

The purpose of the AMI research project was to explore collaboratively with operating museums the theory that the use of data in practice can help museums document and improve their impact (effectiveness) and performance (efficiency).

The hypothesis is that measuring outcomes (i.e. assessing impact) can be strengthened by choosing appropriate sources of data and comparing: 1) a base-line situation and change over time; 2) peer museums, and/or 3) recognized benchmarks, thereby using data to provide new insights. An implication is that an impact assessment based on one source of data should be tested periodically using other evaluation methodologies.

This preliminary exploration of the theory used a limited sample size (n=6 that completed their participation) and time frame (18 months) to see if the participating museums found that the use of the data they selected helped their museums make decisions leading to improvements in practice (see Section 5 for descriptions).

To achieve this purpose, NEMA and the authors undertook a recruitment phase, which resulted in a number of New England museums submitting applications, followed by an operating phase, during which the participating museums followed protocols outlined by the AMI advisers, culminating in a final report-out workshop.

Each of the four original advisers (David Ellis, George Hein, John Jacobsen and Laura Roberts) agreed to be the liaison and coach for one or two of the participating museums. In order to describe accurately to the larger museum world what it means to expand the use of data-driven decision making, the advisers realized that they needed additional assistance to keep track of the work, and museum evaluator Lynn Baum graciously volunteered to join the authors just prior to Workshop Two. Evaluation interviews were conducted by someone other than the museum's liaison and coach.

The advisers coached the participants as they: articulated the impacts each museum wanted to assess and the benefits it wanted to provide; selected and then collected appropriate data that might measure progress towards specific goals, and developed capacity toward collecting data consistently, using it strategically, and communicating impact persuasively.

The project took half a year to organize and eighteen months to operate. The CEO and one or more senior staff members of each institution agreed to attend all four workshops. Gore Place and the USS Constitution Museum volunteered to host two workshops each. The only financial commitments for the participating museums were a \$250 fee per museum for food, and their expenses of hosting and/or travelling to workshops. The five project advisers volunteered their time and all expenses and held over thirty planning and coordination meetings in addition to the workshops.

A. The recruitment phase (January 2017 – June 2017)

NEMA provided the advisers with a list of NEMA member museums that met AMI's criteria; the advisers expanded the list with non-NEMA members, resulting in a mailing list of thirty-five qualifying, independent New England museums. The criteria were that the participating museums were public, visitor-based, independent (not university based, for example), with budgets of \$900,000 to \$5 million within driving range of Boston, so that all could attend the proposed workshops. These museums were sent invitations to attend an explanatory webinar. Twenty museums attended the webinar after which, museums could submit an application form to NEMA.

Initially, ten museums of comparable size (budget, staff) in different disciplines expressed interest. Over the course of the project, four museums found capacity issues, staff

changes or discovered that they “didn’t have the bandwidth” to participate, while six continued through to the last step, the summative evaluation interviews.

The final six participants are well-established and respected New England museums with a rich range of perspectives, all within the target annual budget range:

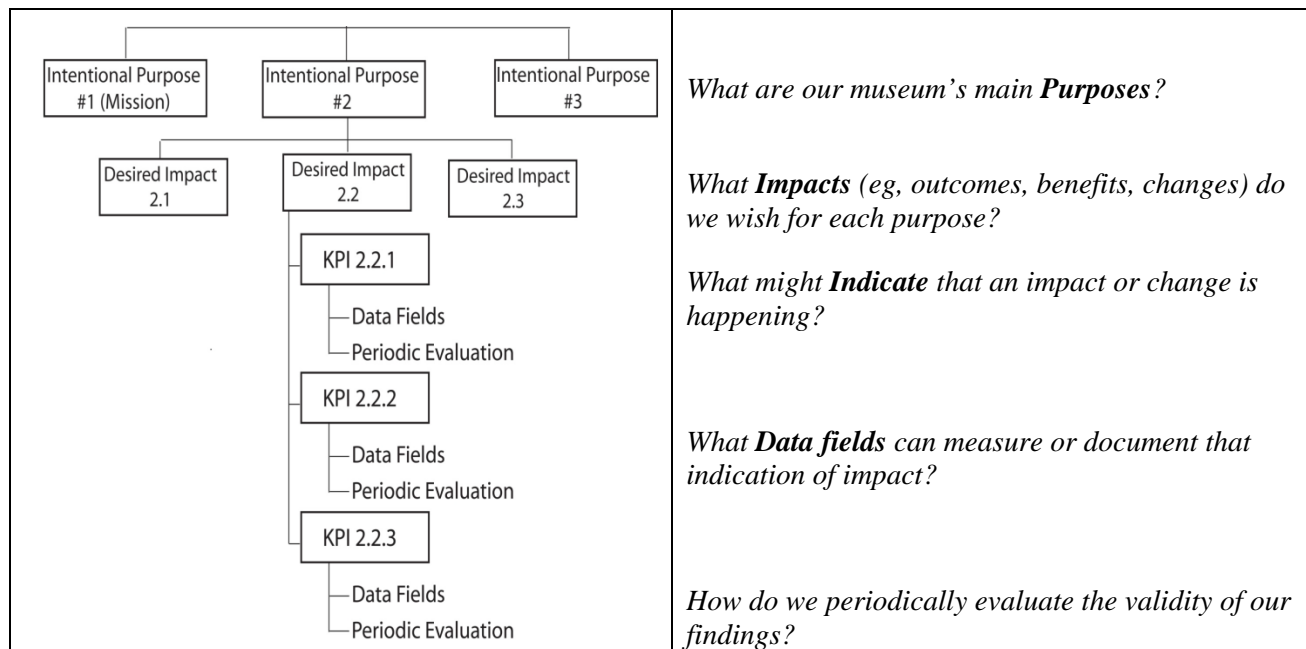
- Children's Museum of New Hampshire, Dover, NH
- Gore Place, Waltham, MA
- Paul Revere House (Paul Revere Memorial Association), Boston, MA
- Rough Point (Newport Restoration Foundation), Newport, RI
- Seacoast Science Center, Rye, NH
- USS Constitution Museum, Charlestown, MA

B. The PIID Sequence

The advisers led the participants through a specific process to select their data fields, called the “PIID Sequence” (Purposes → Impacts → Indicators → Data fields). The sequence starts with museum leadership articulating one or more of its intentional purposes, then stating what changes or impacts they aspire to achieve for each purpose, and what real world observations might indicate that impact was happening. Then, what data fields might measure or document changes in that indicator. This PIID Sequence is illustrated below:

The PIID Sequence

Purposes → Impacts → Indicators → Data fields



All participants developed their selections internally and submitted their draft choices on “PIID Sheets,” following an outline by the advisors. The advisors coached the museums through a few drafts until all the museums had sharable and largely consistent lists of their AMI test proposes, impacts, indicators and data fields.

C. The operational phase (July 2017 – January 2019)

During the year and a half of operation, the project followed a sequence of steps:

- **Workshop One (June 2017):** Kick-off workshop with adviser presentations and tutorials about the project.
- **Purpose, Impact, Indicator and Data (PIID) Sheets:** Each museum articulated its primary and secondary purposes and their desired impacts and benefits and the indicators that might be useful to measure and document them. This was the most active time for the advisers as they coached the participants through how to develop their own PIID sheets over several drafts. Much of the advice was to simplify data collection ambitions and clarify how the data indicated the impacts they wanted.
- **Workshop Two (September 2017):** Museums met as a group with the advisers to discuss their final purposes and their metrics, compare notes about data collection strategies and share how various metrics had been used and received internally and externally. The group also brainstormed other possible metrics and collection strategies.
- **Follow Up PIID Sheets:** Participating museums confirmed their two or three impacts to study, along with two or three indicators for each impact that: 1) may be measures of each of these desired impacts, and 2) have feasible data collection strategies.
- **Data Collection:** Each museum then collected data based on its PIID Sheet, starting with base line information and then collecting additional relevant data.
- **Workshop Three (March 2018):** A mid-point check-in at which the advisers and the participating museums reported on their work to date both in terms of refinement to metrics and data collection strategies and whether these actions informed any changes in their internal processes or external service delivery.
- **Process Evaluation:** Private telephone interviews held with each museum to evaluate the progress and status of the work.
- **Follow Up:** Continuing telephone and online communication with the project advisers on progress in data collection.
- **Workshop Four (November 2018):** After eight months, the museums reconvened to report on what ways, if any, the use of these new indicators impacted their effectiveness and/or efficiency in achieving their purposes, managing their programming and allocating their resources and/or making a case to funders and other stakeholders. Each museum reported on whether the process and collaboration with the other participating museums affected their museum.
- **Summative Results Evaluation (January 2019):** Private telephone interviews held with each museum CEO to evaluate the museum’s results from the study.

D. Reporting and Dissemination Phase (February 2019 – November 2019)

With their role as advisers completed, the five authors undertook writing and reviewing this document over six months. The participating museums will review the draft, followed by NEMA before further distribution. After submission to NEMA, the findings will be disseminated in various formats in response to requests from publications and organizations.

E. AMI and NEMA supported participants with information and network scaffolding

Participants and advisers shared two online sites and a reference database:

- **The Basecamp Site (AMI Home Base):** Contained the project's library, the calendar, correspondence and on-going discussions. It had everything but project data. The library grew with relevant articles, links to similar initiatives (e.g., COVES, DataArts) and source materials, such as MIIP 1.0.xlsx.
- **The Dropbox Folders (AMI Pilot Project Data):** Each museum had a data folder with their submitted PIID Sheets and other reports. All participants had access to each other's folders.
- **The Museum Indicators of Impact and Performance (MIIP 1.0)** is a database of 1,025 data fields used by museums and related organizations. While it is a dense Excel database used for research, it contains many examples of data fields. It can be downloaded for free from <http://www.whiteoakassoc.com/library.html> and filtered by categories of purpose.

NEMA, specifically Heather Riggs under Dan Yaeger's leadership, played a critical and much appreciated role in organizing the workshops, handling logistics, circulating correspondence and integrating the work with NEMA's other activities.

The authors were pleased to see the progress and engagement of all who participated with evident energy, interest and openness to new ideas and processes.

F. Limited scope for this study

The AMI Study was a pilot research project run on a voluntary basis with only a handful of museums over a limited term with no support funding. While the results (see Sections 5 & 7) are promising, there was only the participants' plentiful good spirits and NEMA's coordination to keep the participants on task. A more formal and funded study is recommended by the authors based on the findings.

The museums participating in the *Assessing Museum Impact* (AMI) project reported on whether the use of data improved their effectiveness and efficiency. Collectively, the six mid-

sized New England museums of diverse disciplines and contexts reported building capacity to use data strategically and improving outcomes for their museum.

Because the sample size is small, we cannot assume these outcomes apply to other museums. Every museum is unique in resources, purposes and community needs; further, each museum is at its own place and pace in its desire to increase its use of data. Hence, this report lists learning outcomes reported by at least one museum but makes no claims for their direct application to other museums.

4. Participant methodologies: What they did

During the last workshop, each of the six museums that completed the process presented slides based on an AMI template that reported what they did (this section), and what they learned (Section 5).

This section relays their reported AMI activities, summarizing what data fields they used, how they collected and reported data, and how they interpreted the data. As their reports total over twenty slides full of bullets, this section will select representatives in spirit and sample.

A technical analysis of the purposes, impacts, data fields and collection methods is described in Section 6.

By the time of the fourth workshop, all the museums had completed the following tasks, as reported on the PIID Sheets and at the previous workshops:

- Selected two of their institutional purposes as the basis for the AMI project.
- Listed some of the impacts and benefits that they hoped would be among the outcomes of achieving those purposes.
- Figured out how they might observe whether those outcomes are happening and what indications they might measure. This resulted in a list of indicators and data fields.

The AMI advisers coached the participants through several rounds of their PIID sheets. The AMI process is technical and uses definitions that take some time to absorb, and the coaches wanted to get all collaborators to conform to the same system and terms. Additionally, the museums often started with big ambitions, and when the coaches talked through the logistics of collecting all their desired data, the number of indicators and data fields were reduced to favor readily available data.

A. Data fields desired and used

The number and variety of data fields in the AMI Data Field Database (February 2018; n=104) is both impressive and daunting. There are few common data fields shared by even several museums. Instead, data fields get very specific (“Track number of birthday party guests who are first-time Museum visitors” and “Compile [state] Department of Education enrollment data per town and per SAU. Compare these data with [museum] school program participation data.”). This variety and specificity will be challenging to COVES and other data sharing and standardization initiatives.

Examples of the 104 data fields used by the participating museums include:

- Facilities rental net income as a % of total revenue
- Membership renewal rates (3 yrs)
- Sentiments in social media about the programs
- Geographic visitorship data
- Number of children observed asking questions
- Attendance by first timers
- % of students served through subsidized programs
- Analysis of visitor evaluations for positive learning outcomes
- Rate of repeat visits from schools
- Monthly rankings on TripAdvisor
- Google Analytics
- Net Promoter Score

To better understand this collection of 104 data fields, the authors grouped them by methodology and content categories, as listed in Tables C- E. Of the twenty-four content categories, only a quarter (6) accounted for over half of the 104 data fields used by the six museums. The most frequent data fields were collecting *appeal opinions* from audiences and *unit counts* of visits, program participations, students, donors and web hits, in that descending order. While the participants shared interests in the same content, they did not share actual data fields, with the exception of a few who adopted the Net Promoter Score. The other eighteen categories included ten data content categories used by only one or two of the participants (e.g., number of citations).

None of the participants tracked changes in the cultural diversity of their audiences, despite several early purposes related to broadening participation. Quantifying current cultural diversity and then measuring later diversity is hard, sensitive, judgmental and technical, so none

pursued it. (Subsequent work by COVES and Of/By/For All may have provided some useful guidance.)

Several used social media and Google Analytics as evidence of mission impact by measuring comments about learning topics and web page use of their educational web pages.

See Section 6 for a technical analysis of the purposes, impacts and data fields.

B. Data collection

Participants took stock of what data they were already collecting and collected relevant historical data to serve as the basis for analyzing incremental change over time.

The museums collected their selected data fields over one year. In most cases, this meant continuing existing data collection practices, sometimes with more rigor. In other cases, new methods were launched and some surveys were conducted. Collectively, the participants used the following on-site and online data collection methods:

- Point of sales (POS) system reports
- Revenue and expense data
- “Bean counting” – Tallying by hand (stickers, etc.)
- Pre and post program evaluations by students and teachers
- Visitor surveys
- Observations
- Compiling social media comments
- Google Analytics
- Social media ratings (Trip Adviser, Yelp, etc.)
- Zip Code and geo-locational tracking

All methods were relatively low cost, as the project offered no incremental funding. Several noted the higher level of accuracy using Altru or similar brand POS reports, accounting data and consistent survey questions. One added a question to its group reservation process and database to capture repeat reservations. Participants generally favored quantitative data collection over qualitative data, perhaps because it was more readily available and seemingly easier to gather and apply.

Some participants used the AMI project to experiment/learn about new data sources, such as ArcGIS for geo-locational data and analysis, and social media (TripAdviser, Yelp, Google and Facebook) for audience reactions and interests. One museum found TripAdviser and Google

Reviews more reliable and informative than Yelp or Facebook and settled on TripAdvisor for tracking comments. Because the algorithms for creating rankings are not transparent, museums found comments more useful than rankings, particularly in helping their front-line staff better understand what visitors are looking for.

Implementing new data collection methods posed initial challenges at a staff level, but most of these were overcome. Both the challenges and the learnings from these explorations are in Section 5.

C. Data analysis

Participants agreed that their museums needed to develop more capacity and systems for analyzing, circulating and using the data they collect. Nevertheless, the participants noted many instances where an analysis of the data already led to actionable improvements. For instance, an under-reached educational market was identified, an expanded role for high school students developed, and a new way of coaching floor staff evolved.

During the run of the project, there was little evidence of operational adjustments to data collection and use in job descriptions, internal communications, meeting agendas or other routine administration activities; however, in the summative evaluation, all aspire to continue and build their capacities toward a more data-informed museum.

5. Participant-reported findings: What they learned

This section reports on what the six participating museums learned, as much as possible using their voices; this section is organized as follows:

- A. What they learned about using data in research and planning
- B. How data-use affected their staff
- C. What they learned about handling data
- D. Improvements to the museum attributed to using data.

A. Research and Planning

Without a clear sense of mission, it is difficult to articulate intended impacts. A museum's mission, and the strategic plan that flows from that mission, rather than data, should be the starting point for determining indicators.

Once the participating museums became more comfortable with data and had more useable data, they could see using it to inform budgeting, staffing and scheduling, marketing messages, and financial strategies. Participants also saw the potential for developing new analytical tools and skills as well as developing data collection strategies intended to inform strategic planning discussions.

B. Cultural Shifts

Incorporating Data: Changes to the way they work

As they became more comfortable with data and analysis of that data, participants envisioned how it could inform organizational assessment and decision making as an ongoing or regular practice. For example, a deeper understanding of the sources of revenue (events, admissions, rentals, annual appeal) could help the museums make decisions about the allocation of resources and policies related to revenue generation.

Staff Integration and Buy-in: What they learned about communicating and involving staff and leadership

Involvement of "staff at multiple levels" can help to change organizational culture, building and sustaining "staff buy-in." There may still be resistance, but if staff at multiple levels and from all departments "understand the large picture," the shift can take place. There was recognition of the importance of "keep[ing] a culture of evaluation going."

Operations: Data collection as an operational routine

Collecting and using data can become an organizational "habit," which in turn can support other aspects of cultural change including breaking down silos, routinely asking visitors for feedback, and altering internal communication. But data and its analysis are helpful only when information is shared clearly and routinely. Data use can remove the "emotional dimension" around expecting improved staff performance, de-emphasizing the emotional component of critical feedback.

C. Handling Data

Process of Data Collection: What they learned about how and where to collect data

Participants observed that it “doesn’t have to be as overwhelming as it sounds.” They realized they were already collecting (but perhaps not sufficiently analyzing or using) data and that there are both low tech and high tech options (online and in-person surveys, interviews, comment cards) for improving data collection and analysis. Training staff (and interns and volunteers) was essential. Comfort with using data in one part of the operation (like evaluation of school programs) can inform efforts in another part. Starting with easier data-collection tasks (e.g., using stickers to ‘vote’ for favorites on a large gallery map, counting attendance at events, asking a single question, etc.), rather than daunting undertakings like visitor surveys, can get the process going. Participants found technology could make a huge difference, such as employing new customer relationship management or point of sale software. Also, carefully placing data collection points in prominent locations, where people have time to complete surveys or other instruments, was useful.

Challenges to Data Collection: Resistance, problems and conflicting priorities

Participants encountered logistical and capacity challenges. Allocating staff time, particularly during busy seasons, was difficult, and some felt that their limitations kept them from fully completing the job of systematically collecting consistent data or accomplishing as much as they hoped. Also, even with data in hand, analysis remained a challenge, often because of lack of skills and experience. Some were left asking “so what? What are we doing with this information?” Participants noted other frustrations such as collecting data about the diversity of their visitors and departments collecting data in different ways. However, with time and experience, participants hoped that investments in new data mining technologies would yield useful multi-year data for tracking and analysis.

Social Media: The sub-set of all data fields that owe their source to online social media

Participants were excited about the potential of social media as a source of information and feedback but often found randomness, quirks, inconsistencies and unpredictability in ratings on platforms like TripAdvisor and Google frustrating and “perplexing.” They expressed a desire to network more with other museums to share strategies for mastering their use of these marketing channels. Often qualitative data – visitor comments – were more useful than ratings, although time consuming to monitor. “The reviews remind us that even with our high attendance

levels, the visitor experience can always be improved.” Participants also found comments on these sites provided quotes for marketing and that responding to reviews helped boost their rankings. They also watched for overall improvement and a decline in the proportion of negative reviews and comments. As with survey data, participants found information from reviews helpful in depersonalizing criticism and improving staff performance. Other sites, such as Facebook or Twitter, present a different source of insights: by developing metrics to measure engagement with posts on these sites, museums saw the potential for “a reasonable measure of mission impact as people associate our institution’s content with their digital personas.” Finally, participants were reminded of the usefulness of web analytics for improving the museum’s website.

Analysis: The process of extracting and communicating knowledge and useful meaning from data

Participants were clear that raw data alone was not enough, that the utility of data was in clear analysis and routine reporting. Some had reliable data from multiple years or sources that could be analyzed to identify trends. One participant used geo-location software to analyze data collected over prior years for trends and areas of opportunity in participation and visitation by schools and groups. But others confessed that they had yet to “institutionalize” analysis or generate regular reports from the data they had. One noted the need for iterations in data collection and analysis, refining processes over time.

D. Improvements from Using Data

Participants reported improvements from using data in practice in a number of areas: Mission and Purpose, Decision-making, Visitor Experience, Programs, Audience, and External Relations.

Mission and Purposes: The museum’s intentional aspirations to improve the world

For some, data “validated” what the museum was doing but for others, it identified “areas in need of improvement.” One participant found ways to use social media engagement as an indicator of constituents’ connection to the museum’s mission, noting that mission-related posts were well received by users, as demonstrated by engagement metrics.

Decision-making: The museum’s processes, priorities and values for making administrative choices based on data

Participating museums reported using data to inform decisions about functional issues like staffing, scheduling and budgeting. They also saw utility for thinking and operating more strategically. They were better able to articulate intentions and goals and then become more rigorous about collecting evidence to support decision making. One noted that data either “supports what you think is happening and/or exposes false assumptions.” Data served as a “finger on the pulse” of museum operations. There was some indication that participants would reallocate resources based on new information.

Visitor Experience: The museum’s on-site physical galleries, theaters, exhibitions and open studios that are available to visit on a walk-in or reservation basis

Understanding visitors – who they are, their motivations for visiting, and what they enjoy – was a focus for many participating museums. Museums also looked at the nature and quality of the experience and the ways that interventions like signage, amenities and tours are, or are not, successful. One looked at data about returning visitors to fine tune activities that would appeal to them. Another looked at improving the visitor’s experience of the museum’s grounds to support introducing a grounds-only ticket option. A third used data to look at the impact of a new visitors’ center and found that it “helped in some ways but not in others.”

Audience: The people who engage with the museum’s activities, in three broad groups: visitors, program participants, and members

Museums were better able to understand patterns in visitation and organized program participation, confirming impressions or identifying opportunities in the market. Importantly, some were able to demonstrate their reach into previously under-served communities. One looked at changes in the distribution of the zip codes of members to gauge how well the museum was reaching new audiences.

One museum used data to more closely analyze patterns in utilization of programs and identified patterns and trends in how school and outside community groups made decisions about enrolling in various program options. It also identified potential new markets for programs. Another was able to demonstrate an increase in facilitated school visits over time, which they interpreted as an indicator of success.

Learning assessments completed by both teachers and their students and by visitors reported positive results, primarily around development of new skills and the confidence of children.

External Relations: Use of data with external stakeholders for advocacy and fund raising

Participants noted that data can “substantiate your claims about your museum,” supporting the case made to funders for maintaining or increasing support. It can also strengthen discussions with potential grantors, sponsors, and donors and keep the museum accountable to all stakeholders.

6. Technical analysis of participants’ choices

The purpose of this technical analysis is to understand:

- A. The kinds of purposes that are shared
- B. The kinds of impacts and benefits that are desired
- C. The data fields and collection methods that several museums think might indicate that impacts and benefits are occurring

A. Analysis of PIIDs: The research universe

Following a form developed by the authors, the six museums submitted their selected *purposes, impacts, indicators* and *data fields* (“PIID”) in several iterative drafts reflecting comments from the adviser assigned to mentor them throughout the project, finishing in October 2017. The advisers aligned the formats and assembled the PIIDs into a single document. They also coded and entered the over two hundred entries drawn from the six PIID sheets into an Excel database. Typically, each museum submitted two purposes that it wanted to monitor during AMI. Each purpose had two to eight desired impacts, and for each of those impacts, they listed two or three indicators. Each of these indicators then had two to four data fields the museum proposed to measure and track.

The majority of entries were data fields. In the original database, many of the data fields were compound KPIs made up of several data fields in formulas and ratios. Toward the end of the project in February 2018, a second database of just the data fields actually included 104 data fields.

The authors conducted this technical analysis by coding three sources, each based on verbatim entries from the participating museums: 1) The six conformed PIID sheets; 2) the AMI PIID Database (October 2017; n=208) and 3) the AMI Data Field Database (February 2018; n=104).

B. Clumping of Purposes and Impacts

The following two tables are based on the input from the eight museums that were in the project at the time their intentional purposes and desired impacts were analyzed.

Analysis of Collected Purposes

Assessing Museum Impact

1. (General) Visitor Oriented	2. (Specific) Education Aud.	3. Museum Oriented	4. Community Oriented
1a. More inspire participation, enjoy, engagement (5)	2a. 21st century thinking skills, support development (1)	3a. Better business model (2)	4a. Broader deeper participation of community (2)
1b. Knowledge (2)	2b. Connect students with environment issues (1)	3b. Recognized as a local landmark/ destination (1)	4b. Expand local visitation (1)
1c. Cultural literacy or appreciate national legacy(3)	2c. More engagement with local schools (2)		
1d. Take action on environment issues(1)			

Table A

Analysis of Collected Impacts

Assessing Museum Impact

1. (General) Visitor Oriented	2. (Specific) Education Aud.	3. Museum Oriented	4. Community Oriented
1a. Increase visitors (3)	2a. Serve education/valued for education (5)	3a. Improve Museum operations (3)	4a. Service/ community engagement (2)
1b. Visitors satisfied/inspired/ enjoy (5)	2b. Inspire students (2)	3b. Build Museum finances (2)	4b. Contribute as economic driver (1)
1c. Provide information --about museum - --about content (2)		3c. Museum valued/ recognition/ prestige (3)	4c. Be an urban oasis/ community asset (1)
1d. Visitors motivated to act (behavior change)			4d Preserve heritage (2)

Table B

C. Analysis of collected data fields and collection methods

As the museums started to collect data, and with coaching from the four AMI advisers, each museum amended its data selections, resulting in a shortlist of data fields (February 2018).

This analysis clumped the data fields into twenty-four content categories and twelve data collection methods. Most of the data fields selected are quantitative, perhaps reflecting the incremental effort needed to collect and measure qualitative data.

The twenty-four **content categories** – what the data is measuring or counting -- and the number of appearances in the database (n=104) were:

Data Content Categories
Assessing Museum Impact

	# Data Fields		# Data Fields
Appeal opinions	14	Passes	3
Visits to venues	14	Publications	3
Participation in programs	10	Intent to Return Score	2
Students	9	Net Promoter Score	2
Donors	8	Requests	2
Web hits	7	Citations	1
Members	6	Dwell time	1
Learning	5	Maintenance costs	1
Teachers	5	Property values	1
Impact	4	Rentals	1
Nonprofits	4	Reasons to return	1
Scholars	4	Sweep rate	1

Table C

The qualitative/quantitative distinction resulted in two categories of **data-collection methods**:

Quantitative Methods
Assessing Museum Impact

Unit counts	35
Social media ratings	14
Share of a total	8
Revenues	6
Membership and Visitor Renewals/Repeats	4
Scores (NPS and ITR)	3
Social media counts	2

Table D

Qualitative Methods
Assessing Museum Impact

Surveys with open ended questions	10
Reviews	8
Locations (Zip Codes)	9
Polls	4
Lists	1

Table E

D. Analysis of their reports

The participating museums reported learning outcomes in workshop presentations, interviews, and surveys at different times. The collected database (AMI Findings and Observations.xlsx; n = 487) of outcomes (also called “findings”) includes 146 learning outcomes presented by the six full-term museums direct from their “What We Learned” slides they presented in the final workshop and summarized in Section 5. The rest are from the authors’ notes of their presentations or from their interviews and surveys and inform the other sections of this summary.

The database is granular, redundant and random. To organize these outcomes in order to see the main points and reveal patterns and connections, the authors coded each finding in an iterative process that resulted in a taxonomy of topics and sub-topics. This coding process and discussion led to the table of contents of this AMI Summary Report.

7. Observations and Assumptions to be Tested

After two years of study, evaluation and engagement with the museums participating in the *Assessing Museum Impact* (AMI) research project, the authors offer the museum community the following observations that might be useful to other museums. Section 5 summarized what the participating museums learned; this section summarizes what the authors learned.

A. The AMI project achieved its stated purpose: Participating museums and advisers explored together whether the use of data could assess and improve the museum’s impacts. Participants reported that AMI was a positive experience resulting in beneficial outcomes.

Engaging a cohort of museums whose senior leadership met face-to-face several times, was successful at collecting and sharing their reports. The structured gatherings of regional

museums of similar sizes but with different disciplines was meaningful and useful to the participating museums as well as to the AMI research team. Participants reported that they “got a lot out of” the iterative sequence of briefings, homework and workshops, valuing the opportunity to work with peers, to share experiences and language, and report results to each other.

If the authors were to repeat the project, they would ask for additional details and would clarify their expectations of the mentoring agreement, and be more flexible in the way participating museums could express their individual purposes, indicators, and data-gathering intentions, as some found the language used by the advisers confusing. On the other hand, some participants wanted the advisers to be more prescriptive in specifying some data fields to collect that would be common to all participating museums. In time, however, all participating museums used the shared language, were appreciative of the volunteer advisers, and acknowledged they benefited from participating.

B. The diversity among museums was a major factor when sharing data and forming peer networks.

Early in the process, when there were nine museums participating, the museums submitted their selected purposes, intentional impacts, indicators and data fields in a form developed by the authors. These PIID (Purpose, desired Impact, Indicators of that impact, and the Data fields that will measure those indicators – PIID) sheets revealed a wide range of purposes and desired impacts, although most were focused on assessing their impacts on their audiences, and less on their communities at large or on any other socially beneficial purposes.

After the first museum withdrew, the collected PIID sheets from the two children’s museums, three historic houses, a science center, an art museum, and a historical society listed idiosyncratic purposes and impacts, with little overlap among participants in what kinds of data they wanted.

The advisers decided not to interfere in each museum’s selection of data to assess their desired impacts, nor did they want to stipulate impacts or audiences. Some of the participants wished the advisers had been more pro-active in suggesting data that all participants might collect and share among the cohort, which might have helped them learn more from each other.

Even with the small AMI sample size, the participating museums had many and diverse desires and interests. That suggests that if the nation’s estimated 25,000 museums, in all their

variations of size, geography, and discipline, were to express their unique purposes, desired impacts, selected indicators and collected data fields, the diversity would be multiplied. The implication is that it is unlikely that any single data field, such as changes in yearly attendance, can assess the full impact of all museums. However, were the sample size significantly larger, then some clusters of museums might be both sufficiently similar and numerous enough to make peer comparisons meaningful. This lack of meaningful and consistent comparative data is frequently cited by museums as a stumbling block in assessing and improving their performance.

C. The starting level of staff interest, skills and comfort with handling data affected the impact that the use of data had on that museum

At the conclusion of AMI, the authors verified that the journey to a data-informed museum is long and difficult, especially for museums without a prior culture of using data. Some people in leadership positions may feel more comfortable making decisions based on their own intuitions and experience rather than on relying solely on what metrics tell them. Only those museums interested in increasing their use of data engaged with AMI, and the finishers were those who recognized the benefits as outweighing the difficulties of participation.

Even with this shared starting interest in advancing their use of data, the authors observed significant differences in skills and comfort among the people trying to incorporate increased data use into their museum's culture – some were further along the journey than others. All advanced, yet all have further to go.

Typically, museum staff are busy and frequently over-worked. Buy-in from staff seemed to be an issue for all of the museums, independent of staff size, as there was no incremental funding to support this work. At first, data collection may seem to be an additional burden, only possibly leading to greater efficiency at some later time.

Limitation of resources and competing priorities were common themes for not engaging with AMI or not being able to continue. It was hard to get some participants to go through the AMI process, which was more technical than they had imagined. Several had problems finding a good space in their museum to collect some kinds of data. The authors' language (databases, PIID's, etc.) was new to some, but the final six museums were able to overcome the complexity and complete the project.

D. AMI offers preliminary proof of concept

The theory that the use of data might improve museum impact and performance is supported by these preliminary, exploratory findings. The results suggest that more formal, extensive studies using a variety of approaches to the use of data are justified. All six finalists claimed to advance data-related capacities and/or culture, even though they may have started and ended at different levels of comfort in dealing with data.

The AMI project explored the theory using the *PIID Sequence* approach that assumes a logic model starting with a museum's needs/purposes resulting in outcomes/impacts. It required the museum to identify two of its intentional *purposes*, to express each purpose's desired *impacts*, to select observable *indicators* that the impact is actually happening, and to define the *data fields* and collection methods to measure those indications of change.

While this technical language was challenging for most of the participants – and may have been a factor in some early attrition – by the end of the project, all six museums understood, used and presented results using the PIID Sequence with relatively little assistance. All were able to report results consistently.

Some participants used the AMI process to get started on deciding their goals and figuring out how to collect data, while others, already clear about their purposes and practiced at collecting data, used the process to inform strategic decisions. The authors observed that the participants went through several steps: clarifying their purposes and desired impacts; selecting indicators and data fields that might measure changes in those impacts, and then operationalizing data collection and use. In practice, these steps and sub-steps are overlapping and iterative.

1. Selecting data fields and collections methods
2. Organizing who, how and where data is to be collected
3. Collecting the data over a period of time
4. Analyzing the data and communicating results
5. Applying the data

The participants' comments, presentations and discussions indicate that at the end of the project participants had a better sense of what data they can collect and analyze. They also realized what other data they need but have not yet figured out how to collect, and they have wrestled with the logistics and uncertainty of what data to collect and how it was defined. None

of the six museums that completed the project has fully integrated data-information into its decision processes, but all are more comfortable and see the benefits of moving in this direction.

E. The participants focused on short-term audience questions rather than long-term institutional evaluation

The authors noted the narrowness of the range of purposes and desired impacts selected by the participants. In most cases choices clustered around impacts on their visitors and program participants more than on broader possible museum goals such as community impact, civic contributions, social justice or audience diversity. This trend may have resulted from the manner in which the advisers presented the project and emphasized the use of the challenging PIID approach.

Though visitors are important, the authors encouraged museum leaders to also think about impacts and benefits for supporters, partners and the community at large. Focusing on programming or exhibits may not be the best way to achieve a particular social goal. For instance, if a museum is trying to move the needle on environmental sustainability, it may have more public impact by putting the CEOs of the local lumberyard, utility company and transportation system on the museum's Green Action Committee than by staging an exhibition on the subject.

Most participating leaders seemed more motivated to use data to answer short-term, upcoming management questions rather than to set up long-term ways of measuring changes in their museum's several categories of impacts and benefits.

However, although the AMI project term was limited, long-term results may yet occur. Using data to address pressing management questions addresses their immediate needs, and so it was an appropriate first step given the limits of the AMI project. The use of data to address short-term questions may be a gateway toward deeper and longer-term use of data.

F. Usefulness of the findings to museum practice

The project's format – an expert-facilitated series of workshops focused on a shared need – might be a model of museum practice for other museum networks. The authors volunteered their time over two years, and the New England Museum Association (NEMA) and host museums handled logistics for four workshops at a nominal charge (\$250) to each museum for coffee and lunches.

Section 5 lists tactics that other museums may find useful in their own efforts toward data-integration. The PIID Sequence provides a model to follow, and the AMI project provides a preliminary proof of that concept. The freely available database of Museum Indicators of Impact and Performance (MIIP 1.0.xls – downloadable free at <http://www.whiteoakassoc.com/library.html>) lists 1,025 potential indicators that some participants found useful for guidance.

Before AMI, few of the participating museums had intentionally connected their purposes to their desired impacts and then to indicators and data measuring those impacts. Expressing and selecting this PIID Sequence may be a useful new way to apply the theory to museum practice.

These findings add to the observation that standardizing data definitions across the field will be very difficult. It may also hinder the opportunity for individual museums to properly express their own purposes. In time, the AMI findings may clarify the benefit of peer comparisons based on shared definitions, but the museum field is a long way from routinely benefiting from internal data, which should precede their need to compare to others using shared data definitions.

G. Museums can use data in advocacy, fund raising, planning, and administration

The authors observe that expanding the use of data from tactical operations to strategic decisions may inform and support three broad areas of museum practice:

- Advocacy and fund raising: Public officials and private donors are increasingly demanding data as evidence of a museum's accomplishments.
- Planning: Data from a museum's track records and its peers informs both what it should be planning for and how much to expect it to cost and deliver.
- Administration: Leadership uses data to set realistic objectives and to monitor how the museum is doing, motivating each department's role toward an overall vision.

8. Next steps

A. Participant Intentions

Participants expressed their beliefs that meaningful data would be of considerable assistance to them in a number of ways. Several of these related to advocacy including assessing

“our place in the world” or shedding light on “the values that museums bring to their communities” and in finding better “ways to talk to the wider world”.

Some participants saw meaningful data as providing them with a means for enhancing their effectiveness and efficiency in a variety of ways and from this they projected there would be ways to identify and exploit competitive advantages. Others saw it as a way to learn from institutional comparisons, by using comparable data, and for the same reason some institutions thought it might assist them in their collaborations with other museums.

Lastly some participants identified the use of meaningful data as a means of institutional evaluation and self-reflection.

B. The Role of the New England Museum Association (NEMA)

NEMA played an integral part in this *Assessing Museum Impact* project, and fortunately, has expressed its willingness to continue supporting conversations if appropriate within the existing AMI cohort, whether that is through arranging face to face gatherings at its annual conferences or setting up a community of practice platform. NEMA is also willing to expand a community of practice beyond the existing cohort to include institutions that may be interested in KPIs. For this, someone would need to step forward to be the facilitator.

NEMA has also expressed interest in Jacobsen’s article in ASTC’s *Dimensions* and they hope that at some point the AMI leaders might be able to publish a synopsis of their work in *New England Museums Now*. Additionally, NEMA has agreed to keep on its website certain materials of potential interest to participants and other museums.

C. Dissemination

A presentation on the *Assessing Museum Impact* project was made at the 2018 NEMA Conference with follow-up sessions planned for future conferences. Another session featuring the AMI project is on the agenda for the 2019 NEMA meeting. In addition, this report on the activities and outcomes of the *Assessing Museum Impact* project is available to interested parties.

D. Challenges Ahead for the Museum Field

With the increasing number of non-profits seeking charitable donations, the increased interest in impact investing, the gradual decline in middle-class charitable donations, and the ever-increasing costs for museum operations, it can be reasonably predicted that prospective

donors will want, even demand, more evidence of the impact that a particular museum has on its community. This will require more and better data.

To meet this need, museums will have to use processes that are based on verifiable approaches that specifically address their needs. The *Assessing Museum Impact* project provides a way to approach this effort. To support this, museums will need to be more intentional and informed about the many ways there are to collect and use meaningful data—to find the data that make the most sense for their institutions based on their goals and their communities. Working with colleague institutions may materially assist such efforts.

9. Conclusion

There is a need for museums to use data to measure and improve their impact and performance. There is considerable relevant prior work on assessing the value of a museum's impacts and benefits, which leads to a theory of how to measure changes in a museum's value. The purpose of the two-year *Assessing Museum Impact* (AMI) pilot research project was to explore whether the use of data in practice can help museums improve their impact (effectiveness) and performance (efficiency). Led voluntarily by five senior museum professionals (the authors) and coordinated by the New England Museum Association (NEMA), the project used a specific process to assist six mid-sized New England museums to use data strategically by using the PIID Sequence. The participants reported positive impacts on their management culture and actionable enhancements to their museums. All plan to continue using data strategically. The resulting findings may be useful in building capacity for incorporating data in museum administration, planning, advocacy and fund raising. There is still a long way to go from these small steps, and the authors propose that other museum associations join NEMA's lead in supporting and disseminating these findings and continuing the research started by this pilot.

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