LIBRARY ANALYTICS 
AND METRICS

Using data to drive decisions and services

Edited by
Ben Showers
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Brian Cox has worked in a wide variety of roles, including privacy, copyright, records management, quality, program management and planning. He started his professional career in privacy, where he worked in both policy and compliance for the Office of the Federal Privacy Commissioner. He then moved to the University of Wollongong (UOW), where he dramatically reduced copyright risk through a mixture of education and audits, underpinned by Copyright Policy and Guidelines. He overhauled the Library’s operational data – transforming it from an unreliable, highly varied, complex and difficult to navigate structure, into highly reliable and easily accessible data. He also played a key role in transforming planning and performance reporting, where through championing project management and a much simplified but more coherent planning and reporting structure, he was able to greatly simplify the Executive’s task of strategic stewardship. Brian first developed his vision for the Library Cube when he started working with quality, where with the support of the Library Executive he worked with the University’s Performance Indicators Unit to transform his vision into reality. Since then, Brian has been seconded to the Peer Learning Unit at UOW, where he made great contributions to improving processes, delivering real and significant ongoing savings for that unit.

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Key outcomes at UOW Library for the past five years include: significant restructuring of the organization to extend capacity to support the research
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Introduction: getting the measure of analytics and metrics

It seems that almost every aspect of our lives and the world around us is on the cusp of being transformed by the potential that data and the analysis of that data hold for the services and products we use and activities we undertake. Businesses and services are adopting analytics to help drive more informed decisions, to gain a better understanding of their customers and users and to make sense of the ‘big data’ created by all those interactions and actions. The potential appears limitless: from healthcare to education and from government to business.

Similarly, individuals are increasingly using analytics to help improve their performance and understanding of themselves. The ‘quantified self’ captures data from activities as diverse as running and sport, through to sleeping and general well-being. These popular apps and services enable the collection and analysis of data to help improve performance in whatever it is you’re trying to achieve, whether running, sleeping or productivity at work.

The aim of this book is to explore the potential of analytics at an institutional and organizational level: how analytics can unlock a better understanding of your users, inform decision making and help drive new services.

Library analytics

Libraries, along with archives, museums and galleries, find themselves ideally placed to exploit the full potential of analytics.

Libraries, and the cultural sector more generally, have long been familiar with the potential of statistics and data for informing everything from service development to measurement of impact and value (both locally within the institution and nationally – and even internationally). The variety and scope of the data collected and generated by libraries and organizations such as
museums and archives is significant: transactional data on catalogue searches, item check-outs, log-ins to online resources and services, swipes through the entrance gates; manually collected statistics on space usage, student satisfaction, external visitors to the library. The applications of the data are equally varied and overlapping, including management functions (collections development and management, usage statistics), impact (demonstrating value, benchmarking, improving learner outcomes) and improving services and meeting user requirements (recommendation services, collections management/development).

While this diversity in sources and applications is indicative of the importance of data to organizations like libraries, it also highlights the multifaceted processes and practices for collecting and analysing the data. These practices are often unique to the local institution and its library and reflect both the accessibility of the data in its local systems and the specific uses and types of data that benefit that particular institution and its users. These local variations and challenges would by themselves be sufficient to make this a difficult landscape to traverse, but there are also significant external factors that conspire within the analytics space. Such complications include data access and ownership, formats and standards, privacy and ethical implications.

Maybe more critically, libraries and other institutions are beginning to question exactly what it is that they are measuring in the first place. There is a need to be clear about what is being measured, and why. Otherwise there is a very real risk that our measures become too simplistic or, worse, that we are simply measuring the wrong things: ‘we look away from what we are measuring, and why we are measuring, and fixate on the measuring itself’ (Crease, 2011).

**The streetlight effect**

Have you heard the parable of the man who lost his car keys? Walking from the office to his car in the dark, he fumbles for the keys to open the car door, but drops them somewhere in the gutter. The light in the gutter is poor and he searches on the pavement, where the light from the street light is brighter and it’s easier to see.

He ends up walking home, unable to find his keys.

The implications of the streetlight effect (Freedman, 2010) are that we often look for answers where it is easiest to find information and data. The result is that we often end up focusing on the information and data that we find, rather than on our original questions. We are so busy searching in the light that we forget what we were looking for, or why it was important.

Much current work in libraries, archives, museums and galleries is looking to address this issue and make sure that we are asking the right questions in the beginning and finding new ways to expose and analyse the data that can
contribute to answering these questions – and, indeed, help to refine and improve the questions themselves.

Much of what will follow in this book is a record of this ‘analytics turn’: a renewed concentration on the questions that we ask and how they evolve as the data we collect forms part of a feedback loop, informing both service developments and the reasons for measuring what’s being measured, and improving the questions that we ask.

The challenges of getting analytics and metrics right are not insignificant, but their benefits to organizations like libraries and other cultural heritage institutions are compelling. This opportunity to begin measuring what really matters, is also one clearly recognized by the library community, but it is not unique to the library. The wider education and academic sectors recognize the importance of the right kind of metrics and analysis as a critical part of the services and systems they use and deliver.

For the libraries, the exploitation of learning and research analytics is likely to be an institutional priority for the foreseeable future.

**Learning analytics**

The potential and opportunities presented by the capture and analysis of data appear boundless. Nowhere is this sense of potential for analytics to transform felt more keenly than in the education sector.

In its 2013 edition the New Media Consortium Horizon Report for Higher Education (NMC, 2013) describes learning analytics as

> [the] field associated with deciphering trends and patterns from educational big data, or huge sets of student-related data, to further the advancement of a personalized, supportive system of higher education.

Put simply, learning analytics is concerned with understanding why some students may not be succeeding, what would contribute to their success and how and when interventions might be helpful. The vision is usually to create a more personalized and effective learning experience for students, and even for researchers. The benefits for learners are substantial, and they provide institutions with the opportunity to improve student satisfaction, as well as to enhance completion and retention rates. These are critical success factors for any academic institution.

Much of the current effort surrounding learning analytics is being put into assembling and organizing the disparate departments and services that might contribute to an institutional learning analytics strategy. This is no small task and represents significant institutional change in most cases. Furthermore, much current discussion is around how learning analytics can move beyond...
a simplistic approach to learning, to look at performance beyond the confines of the classroom.

The library has a clear role to play in this larger analytics picture, contributing both its data and analytics experiences and its leadership and expertise, in effectively collecting and analysing data for the benefit of students and in delivering more effective and efficient services.

**About this book**

This book will provide libraries and cultural heritage institutions with an overview of some of the main themes surrounding analytics and the development of metrics. Each of the major themes is accompanied by a series of short, practical case studies describing the development of services or outlining current research and practice in that area. It is hoped that the book will be of use to both managers and library directors in helping them to think about the challenges and implications of analytics in their library or institution, as well as to practitioners who are currently working with analytics or want to learn more. This is ultimately a practical book: you should be able to read the case studies and apply some (or all) of their content to your current role and your library or institution.

**Chapter summaries**

1. **Library data: big and small**

   This chapter explores the definitions of these increasingly popular terms and provides a clear understanding of the differences between them and of the kinds of opportunities that they present to libraries and cultural heritage institutions. While big data captures much of the headlines, it is of little use if we can’t get the ‘small data’ of our systems and services up to scratch.

2. **Data-driven collections management**

   This chapter delves into some of the developments currently taking place in the library sector to exploit the potential of analytics so as to help drive informed decisions about the purchase of materials, usage and collections management and opportunities to extend the impact of the library into new domains.

3. **Using data to demonstrate library impact and value**

   Analytics are increasingly being used to uncover new insights and demonstrate new types of value and impact for libraries and their institutions.
This chapter explores some of the current opportunities that institutions are exploiting through the use of analytics, and the innovative services and tools they are developing.

4 Going beyond the numbers: using qualitative research to transform the library user’s experience
While much of the buzz around data and analytics is inevitably about the quantitative ‘big data’, the role of qualitative data in informing decisions is critical. This chapter explores the many ways in which institutions and researchers are capturing this kind of data and the kinds of insights it is providing.

5 Web and social media metrics for the cultural heritage sector
This chapter explores the potential of web analytics for cultural heritage institutions. The increasingly social nature of the web, and in particular the sharing and discovery of content and resources, makes this a critical area for any cultural institution to understand.

6 Understanding and managing the risks of analytics
This chapter explores the legal and ethical risks of analytics and provides best practice and practical examples for how they can be met and managed.

7 Conclusion: towards a data-driven future?
A peek into the future: given the current work and developments that are taking place within cultural heritage institutions and organizations, how might such developments change the cultural landscape over the next five to ten years? What might a data-driven future look like?

Analytics and metrics: a brief note on definitions
Before we go any further it seems worthwhile to pause briefly and explore the two critical terms that will be used throughout this book: analytics and metrics. I will not provide an in-depth discussion of the terms but, rather, make sure that we all begin with a similar understanding of the terms. This is also a useful way to introduce some of the complexities and controversies of the two terms.
Analytics

Analytics is the discovery and communication of meaningful patterns in data (Wikipedia: en.wikipedia.org/wiki/Analytics). Importantly, analytics is about analysing data to uncover information and knowledge (discovery) and using these insights to make recommendations (communication) for specific actions or interventions. The term ‘actionable insights’ is often used specifically to describe the kind of information that analytics should provide: information that leads directly to an action or actions.

The communication aspect of analytics is often done through visualizations: taking complex patterns of data and representing them in a visually meaningful way that informs specific actions. A good example of a well-known analytics service is Google Analytics, which provides analysis on website data, such as the number of people visiting a site, where they come from geographically and so on, and delivers this analysis via different visualizations on a web dashboard.

Metrics

In the context of this book and of its use in the analysis of data, metrics means the criteria against which something is measured. A more formal definition is provided by the Oxford English Dictionary as: ‘a system or standard of measurement; a criterion or set of criteria stated in quantifiable terms’ (OED, 2001).

If you are a salesperson, the number of sales you make in a given period or the amount of positive feedback you receive may be the specific metric against which you are measured. By using that data as a benchmark you can make an informed decision about your performance as a salesperson. Metrics can also be applied to much more complex areas, such as bibliometrics, which seeks to apply mathematical and statistical methods to the analysis of research outputs and literature to measure citations of articles, for example. Bibliometrics is increasingly used to explore the impact of a specific field of research, and even the impact of individual research papers.

As with the streetlight effect described above, there is often an inevitable bias towards the types of data that can be captured rather than the data that should be captured. Indeed, the increasingly controversial topic of journal article impacts and how they are measured provides an example of the potential problems that an inappropriate application of metrics can have on education and, in particular, in research.

References

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