In 2015, the average research administrator has stacks and stacks of paper, uncounted databases of information, and shared files that are bursting at the seams. This data was either system-generated, captured because it was mandated, or deemed important at the time. These are all valid reasons for it to exist, but once the data are collected, what can be done to make the data support the business? Beyond the initial need, unless the data is explored and organized to create benefit, the metric value remains locked away. By understanding what the data means, research administrators can begin to change and improve the research administration environment outside of a database. It is clear that as more and more data floods into our offices every day, research administrators cannot afford to ignore the data that drives the organization.
The attempt to explore research administrative data is not a new idea. Peer-reviewed articles show that data and metrics, often called research analytics, can support research administration if common pitfalls are avoided. In 1986, Baylor College of Medicine sought to use metrics to understand faculty and department activities—including research grant dollars—and by 1998 had created a “culture of data and accountability.” Well into the 21st century, institutions can use metrics to provide research administrators and all levels of leadership with valuable and actionable information.

This two-part article begins to explore how members of the National Council of University Research Administrators (NCURA) understand the concept of metrics. Where these data and metrics can make a difference relies on the day-to-day understanding of why metrics are important, how to be aware of and avoid common pitfalls, and how to ensure that the institution is prepared to provide ongoing support for this importation function. These three topics allow the conversation to move away from “what are metrics?” to “how can metrics support us?”

Why are Metrics Important?
Utilized correctly, research metrics are an important tool for research institutions, higher education, and the healthcare industry because they can measure an institution’s performance in obtaining and executing sponsored research funding. Metrics, or research analytics, also can help institutions formulate strategy and plan for the future. The main benefits of research analytics include: providing institutional leadership with actionable data to inform decision making and planning; demonstrating leading indicators of future trends in sponsored funding which, among other things, allows for better budget projections; and offering a comparative view across different units or with other institutions.

More specifically, the leadership of an institution may decide to provide more resources to a particular unit or department based on projected growth. Executives may decide to allocate space, personnel, and services differently based on research activities and the type of support needed. For example, if a department of cell biology asks a dean for more laboratory space, metrics are the tool that deans should use in making an informed decision. If an institution sees significant increases in proposal and award volume in one particular area, its leadership may wish to dig into the data to see where the growth stems from, and what kind of support will be needed. Another illustration: if a new public health initiative generates two dozen proposals for new funding for an international program, what is a reasonable expectation for award success? And based on that expectation, what kinds of plans should that school or program be making? Will administrative departments need expertise to handle foreign transactions and manage new international subcontracts? Will additional legal counsel be needed for the type of work that is being proposed? These questions can be anticipated with good data and analytics, and therefore an institution can systematically plan for the future rather than engage in last-minute scrambling.

From a financial perspective, knowing how research portfolios (and, as a related factor, indirect cost recovery) may grow or contract helps institutions plan for important events like hiring, building, and/or purchasing equipment. Metrics will also help an institution with analysis by discipline: should researchers and institutional leaders be spending more time and resources on areas with greater success rates for funding? Should they focus their attention on programs that they know to be of interest to specific sponsors or donors? Institutions know these things not only by analyzing and comparing internal funding environments and data but also by looking at publicly available data from funding agencies. Additionally, comparing metrics and rankings across institutions can provide institutional leadership and regulatory boards a better understanding of how peers measure success. No matter the data source or the expected outcomes, it is important to get started on the right foot to save time and maximize efficiency.

How to Get Started & Avoiding Common Pitfalls

Determine the Question
Determining the question to be answered is similar to the process researchers go through when designing a scientific study. When deciding which data to pull together or when responding to a request for analysis, it is critically important to determine the actual question and articulate the need for the information. Investing time and effort in the beginning is necessary for the project to have a greater chance for success. To define what is required, start by asking questions about the data. What is the team looking for? Can the question be expressed clearly, both to the owners of the data as well as to those who will be receiving the metrics?

Understanding the definitions for reports and metrics can be a problem, and must be defined by all groups. When working with external groups, ensure explicit and common data definitions for the provider and receiver to ensure buy-in. For example, if a department is asking for an assessment of changes in research volume one year to the next, does the requesting team expect sponsored expenditures? Or revenue? Perhaps proposal volume? These questions drive the investigation.

In short, specificity is necessary to get accurate and useful answers. And if the answers do not provide the information that was originally needed, ask different questions, refine the questions, or broaden the scope. Providing report parameters and documenting data definitions will help ensure transparency and clarity when sharing or presenting data analysis and metrics to other parties; for example, from a five-year view to a ten-year view or from looking at one department to looking across multiple departments. Again, similar to research activities, setting data boundaries through a series of questions supports a successful report. If a requested report measures incoming awards for a given year, how should that report count the start date of a new award? For date ranges, the
questions may be: By the date of the award notice? Or project start date? Or perhaps the date that the award was set up in the institutional system?

Identify the Data Sources, Set Boundaries and Collaborate
A common pitfall is using the wrong source of data. Data needed for reporting on research productivity, compliance, and other related issues often resides in multiple different offices across a research institution. After the defining questions have been clarified, it is important to determine where that data is housed. It is also important to discuss other issues such as application security and permissions, formats of the various systems, system interfaces, and data quality and stability.

To maximize both efficiency and success, identify the data and application owners. If communication with these key stakeholders is transparent and benefits the larger group, the collaboration will likely be much smoother, and if there are any questions, bring the group together to explain objectives. Offering to share the results or the findings is another way to encourage collaboration. Once key players are gathered, it is often helpful to reiterate the objectives and state the intended plans for distribution of the metrics so that there is a common understanding of the goals.

Human & Technical Resources:
If the institution does not have existing expertise or human resources to generate reports on research or conduct analytics, a pitch to leadership highlighting why metrics are important can get the ball rolling. A few sample reports that show comparative data across departments or institutions, coupled with analysis of what the data mean, why it is important, and demonstrating that pitfalls have been avoided should help executives understand what a powerful tool metrics can be. The detail oriented skills needed for quality metrics are built-in to the core of research administration: organized, straightforward visual illustrations such as graphs and charts, are important to get points across. Too much information in one slide or on one page can confuse the reader.

If the institutional leadership is convinced that hiring a specialist for research analytics is necessary and useful, think about what kind of support is needed. If budgets are tight, consider using existing resources, including student workers or central IT to help. Initially, the department may wish to hire a reporting analyst who will take the lead on writing data queries and running reports to provide management with the type of information needed to answer questions and provide comparative analysis.

The types of skills needed for a reporting analyst will likely include experience in using relational databases, report/query building tools, and familiarity with some programming languages. Experience with data manipulation and analysis are often needed, using programming tools such as SQL or Python. However, if the institution uses a simpler framework, Access or Excel may suffice. If the institution is looking for more sophisticated analysis, knowledge of statistical modeling and a background in data science might be necessary. For any role involved in research analytics, prior experience in research administration and/or knowledge of sponsored research is helpful for contextual understanding of the industry and better comprehension of the data.

Conclusion
Part one of this article has explored why metrics are important, where metrics can go wrong, and the important concept of ongoing support. NCURA members have vast stores of data collected, so why not let the data help guide the work? Transforming data into useful metrics builds assessable knowledge that can be tapped for both operational and strategic use. Part two, currently slated for December of 2015, will continue to touch on topics related to exploring metrics that can benefit NCURA members. As this is a two-part article, feedback and real-world examples are greatly appreciated.

References