This chapter will be published in an upcoming issue of *New Directions for Student Services* called, “Supporting Students Through Data-Driven Decision Making: Considerations for Student Affairs Practitioners.”

This chapter asserts that data is more likely to improve learning when assessment focuses on sensemaking conversations among students, faculty, and student affairs administrators, rather than advanced statistical techniques.

**Approaching Big Survey Data One Byte at a Time**

*Charles Blaich, Kathleen Wise*

The farther you are from a sound, the harder it is to hear. There is an assessment corollary to this physical fact – the farther your assessment data is from the processes that promote learning, the harder it is to use that data to improve learning.

There are many well-designed, nationally-distributed institutional surveys that assess student engagement, involvement, satisfaction, campus climate, and a host of other important aspects of student experience. But because these surveys ask students to make broad, overall judgments about their experiences at your institution, the data they provide is “distant” from the programs, activities, classes, and experiences that collectively led to each student’s responses. For example, it is not obvious what programs an institution should create or revise to respond to survey data indicating that students rarely have discussions with “people of a race or ethnicity other than their own” or that they do not see the importance of “influencing social values” (questions from the National Survey of Student Engagement and the CIRP Freshman Survey respectively). Survey data pointing to challenges with such issues suggest an action of some sort, but what action exactly?

In our view, data from “big surveys,” the shorthand we will use in this chapter for nationally-distributed institutional surveys, can provide very useful data for improving student
experiences and learning if staff and faculty use them as a base for deeper inquiry that connects survey results to the particulars of an institution. In the following sections, we will describe a variety of techniques that we’ve seen people use to make big surveys more actionable. These will not be fancy statistical techniques. Instead, they are all techniques designed to shrink the distance between the quantitative data from big surveys and the actions a student affairs professional can take to try to improve her or his program. As we are fond of saying when we work with our colleagues at institutions, survey data almost always tell you something, but you do not know what until you do further work. Survey data starts conversations, but does not bring them home.

We will focus most of our examples on the National Survey of Student Engagement (NSSE) and the surveys from the Higher Education Research Institute (HERI) because they are among the most commonly used surveys designed to gauge student experiences. However, everything we say applies to other big surveys as well.

**When Everyone Is Responsible, No One Is Responsible**

The gap between data from big surveys and changing practice exists because of the very qualities that make large data sets so useful. Data from big surveys typically come with short summary reports, charts, tables, and/or graphs that compare students at your institution to students in various comparison groups - institutions in your institution’s Carnegie Classification, all institutions that participated in the survey, and even comparison groups of institutions you select. That is the good news. But these many reports and graphs that summarize how your school compares to other institutions on different parts of a survey are possible because big survey data is usually aggregated at the institutional level.

The average score of students at your school in response to the question, “Indicate the quality of interactions with students at your institution” may be significantly lower than that of
students at other schools, which is a cause for concern, but the average score of the hundreds of students at your campus who responded to that question does not tell you anything about the patterns underneath that overall average. Were women more likely than men to score lower? Were African American students more likely to have negative views on the quality of their interactions with other students? While a significant difference from other institutions might mark a point of concern or pride, it is unclear what is behind that difference without having more granular information. And this marks one of the biggest challenges to working with aggregated data to identify ways of improving student learning; averages and other statistical measures are abstractions that represent groups (Rose, 2016), but the experiences that shape learning are unique for each student. There is no “average student.”

One way around “the average student” phenomenon is to find an institutional researcher or trusty graduate student with statistical skills and time on their hands, give them the data file that came from the big survey’s vendor, and ask them to break the data down into smaller groups that represent the diversity on campus. One could break down the data by gender, by ethnicity, by living unit, and by academic year. Or, by ethnicity and gender; by ethnicity, gender, and academic year; and so on; … but therein lies yet another problem. There are so many possible subgroups that an analyst could create countless tables and graphs resulting in an impenetrable data dump. Disaggregating data into smaller subgroups is an important step, but we suggest it follows other work you might do to help identify how you might selectively disaggregate the data.

**Discussion as Analysis**

When talking about big surveys, we distinguish between “data” and “evidence.” For us, data are the means, medians, percentiles, benchmark scores, and other numerical information
from survey reports or follow-up data analyses. We define evidence as the consensus that emerges from conversations that you and your colleagues have to make sense of the data and identify its most important elements. Weick, Sutcliffe, & Obstfeld (2005) capture the nature of these conversations with the term “sensemaking.” Sensemaking is talking with one another to form a consensus around identifying and interpreting events or other information to pave the way for action. As Weick et al. (2005) state, “sensemaking is, importantly, an issue of language, talk, and communication” (p. 409).

Data comes from calculations, while evidence emerges from conversations about the elements of data that are worth paying attention to and acting on. Sending out copies of a report on big survey data via email will have no impact unless there is a follow-up where people have a chance to gather, talk about the report, and come to a rough consensus about the meaning of the data for your institution.

Ten years ago, we observed and subsequently copied an effective approach to group sensemaking led by Deborah Grossman-Garber (Rhode Island Board of Governors of Higher Education). First, Deborah provided a framework for the conversations by asking a few educational researchers to give a presentation on what data from surveys like NSSE can and cannot tell us about students. The presentation included both broader research on student surveys (for example, see Pascarella, Seifert, & Blaich, 2010 and Bowman, 2010) and some background information on the characteristics of the students at the institution who responded to the survey. The researchers had statistical skills and were prepared to address technical questions about the data and the report. But the talk was not pitched at quants. It was designed to serve as survey “bowling bumpers” and set boundaries for what was and was not reasonable to conclude given the survey data they had.
Next, Grossman-Garber invited about 75 people from across her institution to join in a conversation about the institution’s NSSE data. The room was set up with tables that could hold about 8 people. Each table had a packet containing a subset of data from 5-10 questions and a couple of benchmarks from the survey, and the contents of the data packets differed across tables. Reducing the amount of data for meetings like this is critical; data dumps are hard to discuss. Another approach to simplifying survey data that we have used in these kinds of sessions is to create a list of all the questions from the survey and then highlight the questions for which student responses from an institution were much higher or much lower than responses from its comparison institutions. Highlighting only the big differences helps to focus the conversations, and it avoids sidetracking discussions about statistical significance.

Grossman-Garber did not ask the groups to discuss individual questions, but to identify overall patterns that they saw in the data. The product of each group’s work was a two- or three-sentence narrative summarizing these patterns. The point of asking the groups to write a short narrative was to lead them to make sense of a pattern or overall finding from the data in their packet. Each group reported their summary to the assembly, and as they did Grossman-Garber would occasionally summarize what she was hearing across the groups, identifying common and distinctive themes and interpretations. The researchers who gave the opening talk remained for the conversations to address technical questions and gently interject when conclusions strayed from the data.

She ended the meeting by summarizing what she saw as the most common and striking themes, and then asking the assembly, “This is what I heard, does it sound right?” This was a way of both inviting more conversation and allowing the assembled groups to confirm the overall sense she had formed from the conversations. By the end of the meeting, the groups had
reviewed a large set of data and converged on a few key points for possible action without any fancy statistical analyses.

Of course, there are other ways of setting up conversations about data from big surveys that may make more sense on your campus, but the key to successful conversations is to ask participants to focus on finding what they can learn from the data regardless of imperfections in the survey, data analyses, or administration methods. Indeed, we think it is important to note at the start of an exercise like this that the data are imperfect and the goal of the conversations is to root out what can be learned, given these imperfections, that might benefit students. In a sense, we suggest that you and your colleagues adopt an “evidence development” approach to data akin to the “talent development” approach of advancing the talents and skills that people have rather than lamenting what they lack.

**Engage Students**

If you follow our advice and host conversations to make sense of data from big surveys, the first question to consider is who should participate in these conversations. Typically, people in student affairs look to their colleagues in their programs or division. Some reach farther and invite coaches or people in the business office, and the more courageous might even invite faculty to create a mix of views in the conversations. In our experience, the more diverse the participants, the better, especially if it leads people to collaborate with people they usually do not work with.

The conversational mix is even more effective if it includes students, yet they are rarely invited to conversations about data from big surveys. In our discussions with staff and faculty about their institution’s results from a big survey, we are sometimes amazed at the number of ingenious theories that they devise about the ways that students interpreted survey questions or
response options. Of course, it is reasonable to wonder how students are interpreting the questions on a survey. But there is an easy way to address this question — ask them. One way of doing this is to include students in sensemaking conversations like those we described above. Having students in the mix can help refute ingenious theories that faculty and staff may have about how students interpreted the survey questions, what students do outside of class, and how students think about courses and programs. Moreover, staff, and especially faculty, tend to be on their best behavior when students are present.

It is also useful to talk with students on their own. The simplest way to do this is to gather a couple of groups of 5-8 students, ask them to look at the survey questions, and then ask them to talk about how they are interpreting the questions. In our experience, there will be some variability, but their responses will be consistent enough to allow you to see if there are “local customs” in terms of how your students interpret survey questions. We believe this is an important step in making sense of big survey data, since these surveys often employ terms like “study abroad,” “internships,” “learning communities,” or “special academic housing” that students at different campuses may understand in different ways.

But you are underutilizing your students if all you ask them to do is help you understand the ways they interpret survey questions. Students can also help you and your colleagues make sense of data from big surveys. We have routinely asked groups of students to reflect on and discuss findings and summary reports from big surveys to see how they interpret patterns in survey data. We find these conversations to be as rich as those we have with faculty and staff about data, but they are different. Students do, after all, experience our institution’s in- and out-of-classroom curriculum differently than we have designed or enacted it.
One of the most fruitful parts of conversations with students about big survey data is how they talk about and describe the experiences behind the questions on a survey. Quotes from these conversations can not only alleviate concerns about how students are interpreting questions, but also bring findings to life. It is one thing to say, “According to our NSSE data, our students spend far fewer hours outside of class on homework;” it’s another to add, “As one student said, he’d never watched as much TV as he did in his first semester at our institution.” That’s a real quote from a very selective institution where students reported working remarkably few hours per week preparing for classes. And that quote prompted action, while the survey data alone generated disagreement and defensiveness. Likewise, it is illuminating for faculty to hear that when we ask students to provide examples of when they “discussed course topics, ideas, or concepts with a faculty member outside of class,” they often include examples of coaches, librarians, residence hall leaders, people for whom they work on campus, and other people who faculty may not view as colleagues in the academic work of the institution. For these reasons, conversations with students about survey questions and survey data help connect the data with your campus.

Finally, another effective way of engaging students to help make sense of big survey data is through student-led focus groups. This approach requires far more preparation, but for people at the thirty plus institutions we know that have used it, the approach yields both powerful insights and enhanced student agency. Student-led focus groups are especially informative because students will reflect on and talk about their experiences differently with other students than they will with faculty or staff.

Student-led focus group projects typically have one or two faculty or staff leaders. These leaders identify a team of students who commit to working on the project for at least a year. The
more successful institutions have taken this approach a step further by developing programs that lasted multiple years, and creating teams that mixed 4th year and 3rd year students with newer students, so that from year to year, there were always experienced students engaged in the project.

Many of the institutions we have worked with use student-led focus groups to dig into an issue that emerges from a big survey. Recent examples include investigations into survey data indicating an unwelcoming campus climate for students of color, low levels of academic engagement, or low student satisfaction with an institution. While it is appropriate for staff and faculty to take the lead in identifying the broad issues, the most successful student-led focus groups engage the student teams in honing and refining the target of their inquiry. These projects work best when students are partners with staff and faculty leaders in designing, implementing, and even reporting the findings to stakeholders (Werder et al. 2016).

It is important to train students how to set up and run focus groups, but the training and even data analyses can be much more informal than how you would prepare graduate students for scholarly work. Like most assessment work, the goal is not to gather publication-quality evidence, but to gather evidence of sufficient quality to identify some experiments that you might try to improve student learning.

North Carolina A&T State University’s Wabash-Provost Scholars Program is an outstanding example of how the sustained use of student-led focus groups can provide useful assessment data both as a follow up to a big survey data report or as a means of investigating other assessment questions. Students in the program have not only led assessment projects at their own institution, but have also served as consultants at other institutions across the country.
For more information about the program, visit the Wabash-Provost Scholars website:

**Triangulate Data**

Talking with students is one way of bringing in new information to help make sense of data from a big survey. Another way of connecting data from big surveys to your campus is to compare the patterns in the big survey data with patterns you see in other data sources. We are not talking about literally merging data sources and conducting complicated statistical analyses. We are, instead, suggesting that it is helpful to see if a consistent or interesting story emerges as you consider data from a big survey in light of other information you have already collected. For example, if students at your institution report lower quality student-student interactions on your NSSE survey, it would be useful to check whether there are other data from satisfaction surveys, focus groups, or even informal conversations that you or other people in your division are having with students that might also speak to the quality of student-student interactions. To what extent do the data from a big survey make sense given the other data you have gathered and your experience as a professional? What is the narrative that you could write that would tie together these different streams of data?

It is, of course, important to be both careful and honest with yourself as you think about connections between different forms of evidence. We all have strong prior beliefs and tell “just so” stories about our institutions, and it is easy to bend our narratives about data to those beliefs. But, it is also important to consider your day-to-day experiences. The key is to test the validity of your sensemaking by including people who do not share your beliefs in the conversation. It turns out that our capacity to reason towards truth is enhanced when we engage people who do not share similar beliefs and assumptions (Mercier & Sperber, 2011).
Disaggregate, Disaggregate, Disaggregate

Having engaged in sensemaking conversations with colleagues and students, and considered how other sources of data inform the big survey data reports, you can now think about how you might fruitfully disaggregate the big survey data into subgroups. You may need the help of your institutional research office for these analyses.

Based on your work with colleagues and what you have seen in your data, ask yourself if there are particular questions or sets of questions in the big survey that you should focus on, and if it would help to look at differences in the responses of particular groups of students to those questions. Did your prior work point you in the direction of looking at gender differences in service learning participation, or did it point you towards examining differences in academic engagement or student satisfaction for students in different living units? What are the precise questions and subgroups of students that your previous work points towards as you think about deeper quantitative analyses of the survey data?

Another approach is to work from the other direction and ask, “What patterns do we see in the backgrounds or characteristics of the students who are having the best and worst experiences?” For example, if you take questions that ask students about the quality or frequency of particular experiences that, based on your initial review and subsequent conversations, look important, what are the backgrounds and characteristics of the 25% of students who report having the most and best of these experiences, and what are the backgrounds and characteristics of the 25% of students who report having the least and lowest quality experiences? Are a disproportionately high percent of white students engaging in internships or study abroad experiences? Are athletes or students in certain living units experiencing disproportionately low levels of service learning? These kinds of analyses, especially when paired with student-led
focus groups to follow up with students who are more likely to be in groups that are having lower quality experiences, can generate insights into what’s behind those experiences and student quotes can be especially powerful findings for change.

**Caution**

One caution in interpreting data from big surveys is to be mindful of the kinds of questions that students, or people in general, can accurately answer versus those they cannot. A rule of thumb is that students can provide good and useful data on the qualities of the educational and social environment they experience. This is not to say that students provide purely objective data on their learning environments, but as we found in the Wabash National Study, students’ reports on the quality of their educational experiences provide valuable information on the factors that help them learn. Hence, many of the questions from surveys that we have identified in this paper can be extremely useful for helping staff and faculty identify ways to improve the quality of education.

What students, like all people, have a harder time doing is gauging how much they have learned. As Bowman (2014) found, students’ self-reports on their growth are closely related to their college satisfaction, but not to their actual growth on learning outcomes. Student satisfaction is positively correlated with growth on outcomes (Pascarella, Salisbury, & Blaich, 2011), but it is not a proxy for growth.

**Conclusion**

Administering a big survey is easy; using data from a big survey to improve student learning is hard. This is not because of problems with the surveys, but because changing the way that people create student learning environments is hard. And that is the point of administering a survey – to find information that will help people work more effectively to promote student
learning. So it is not surprising that the legwork that follows administering a survey and receiving a data report requires far more effort than administering the survey itself.

In our experience, many student affairs professionals focus much of their assessment on whether or not students participate in a program. This is good—participation is a first step, and it is an important source of information for people who are running these programs. But the quality of the experiences within the program also matters—that is, the extent to which programs require students to engage in meaningful interactions with diverse people and ideas; ask them to reflect on, synthesize, and analyze ideas; and commit intellectual time and effort is what matters for learning. Participation is a necessary first step, but unless you and your colleagues focus on “the continuous task of attending to the day-to-day educational experiences and pedagogical methods within those structures,” participation will not result in learning (Salisbury & Goodman, 2009, p. 13). Data from big surveys can provide this kind of information not only about your students, but about students at institutions like yours. But they are rarely useful on their own. The findings from big surveys need to be contextualized and folded into the culture and community of your institution. They can start a conversation, but you need to close the distance between the data from these national surveys and the learning and teaching environment at your institution before they provide evidence that you and your colleagues can use to improve learning.

This leads to our final point. You will note that most of the techniques we describe in this chapter are informal, focusing mostly on sensemaking conversations with colleagues using different streams of data. The fact that we have ignored formal qualitative research or advanced quantitative analyses is not an accident. It is based on one of the most important lessons we have learned about assessment.
While high-quality scholarly quantitative and qualitative research is aimed at contributing to the “stock of human knowledge” (Boyer, 1990, p. 17), it is not aimed at improving a program so that next year’s students will learn more than this year’s students. We suggest that assessment is closer to Boyer’s scholarship of application, or the question of how “knowledge can be reasonably applied to consequential problems” (1990, p. 21). The act of application is more highly time constrained than the act of discovery; we want to try and make things better for our students now, not years from now. So our mode of inquiry needs to adapt to the timescale at which we adopt and modify programs. In our view, assessment is most useful when, in short order, we make the best sense we can of data relevant to our students’ success, try something new, and then see what happens (Fulcher, Good, Coleman, & Smith, 2014). It is dynamic, incremental, experimental, ongoing, and for most of us, it is not the kind of inquiry that we learned about in graduate school.
References


Charles Blaich is the director and Kathleen Wise is the associate director of the Center of Inquiry and the Higher Education Data Sharing Consortium at Wabash College.