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AN EXPLORATION OF THE USE OF DATA, ANALYSIS AND RESEARCH AMONG COLLEGE ADMISSION PROFESSIONALS IN THE CONTEXT OF DATA-DRIVEN DECISION MAKING

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AN EXPLORATION OF THE USE OF DATA, ANALYSIS AND RESEARCH AMONG COLLEGE ADMISSION PROFESSIONALS IN THE CONTEXT OF DATA-DRIVEN DECISION MAKING

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DISSERTATION

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Education at the University of Kentucky

By

Kimberly Ann Chaffer Schroeder

Lexington, KY

Director: Dr. Kelly D. Bradley, Associate Professor of Education

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ABSTRACT OF DISSERTATION

AN EXPLORATION OF THE USE OF DATA, ANALYSIS AND RESEARCH AMONG COLLEGE ADMISSION PROFESSIONALS IN THE CONTEXT OF DATA-DRIVEN DECISION MAKING

Increasing demands for accountability from both the public and the government have resulted in increasing pressure for higher education professionals to use data to support their choices. There is significant speculation that professionals at all levels of education lack the knowledge to implement data-driven decision making. However, empirical studies regarding whether or not professionals at four-year postsecondary institutions are utilizing data to guide programmatic and policy decisions are lacking. The purpose of this exploratory study was to explore the knowledge and habits of undergraduate admission professionals at four-year colleges and universities regarding their use of data in decision making. A survey instrument was disseminated and, the data collected from the instrument provided empirical information, which serves as the basis for a discussion about what specific knowledge admission professionals at four-year institutions possess and how they use data in their decision making. The instrument disseminated was designed specifically for this study. Therefore, before the research questions were addressed, Rasch analysis was utilized to evaluate the validity and reliability of the survey instrument. Data was then used to determine that undergraduate admission professionals perceived themselves as using data in their decision making. The results also indicated admission professionals feel confident in their ability to interpret and use data to in their decision making.

KEYWORDS: Data-driven decision making, higher education, college admissions, survey research, Rasch modeling

Kimberly Ann Chaffer Schroeder
Student’s Signature

May 4, 2012
Date
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Chapter One

Introduction

“We are in a historic moment of horse-versus-locomotive competition, where
intuitive and experiential expertise are losing out time and time again to number
 crunching” (Ayers, 2007, p.10). In education, this number crunching, in the form of data-
 driven decision making (DDDM), has become an impetus for discussion, research and
debate in circles from the kindergarten classroom to postsecondary settings (Bensimon,
Polkinghorne, Bauman & Vallejo, 2004; Fussarelli, 2008; Hutchinson & Lovell, 2004;
Mandinach & Honey, 2008a; Mandinach & Honey, 2008b; Shavelson, 2010). Data and
the analysis of the data are impacting almost all decision making processes at all levels of
education.

In higher education, the demand for accountability from both the public and the
government results in increasing pressure for professionals to use DDDM to support their
choices, from curriculum decisions to admissions criteria (U.S. Department of Education,
2006; Shavelson, 2010). However, little empirical research has been conducted to assess
whether or not professionals in four-year postsecondary institutions use data in decision
making. The majority of current DDDM literature concentrates on issues in K through
12 education. Currently, the literature fails to address whether or not higher education
professionals at four-year postsecondary institutions are actually using data to make
decisions. Furthermore, if professionals in higher education are, in fact, using data to
make decisions, little is known about who is using data and to what extent they are using
data in their decision making processes. While individual case studies of higher
education professionals using DDDM in four-year institutions have been published and
some work has been done regarding community college administrators, empirical studies
addressing DDDM in four-year institutions are missing (Banta, Pike, & Hansen, 2009; Jenkins & Kerrigan, 2008; Jenkins & Kerrigan, 2009; Klossner, Corlette, Agel & Marshall, 2009; McClinton & Snider, 2008; Petr & Paskus, 2009; Reynolds, 2007).

Literature pertaining to DDDM in K through 12 education indicates that education professionals do not have the training or skills to utilize data effectively in their day-to-day work and decision making (Hutchinson & Lovell, 2004; Mandinach & Honey, 2008a; Mandinach & Honey, 2008b; Shavelson, 2010). Again, however, there is a lack of literature regarding the knowledge of higher education professionals at four-year institutions in the context of DDDM. In order to integrate DDDM into higher education culture, information must be collected to determine what knowledge admission professionals possess, in terms of using data, and how they apply that knowledge to their decision making. This study will specifically focus on admission professionals at four-year postsecondary institutions.

**Research Questions**

This study is guided by the following questions:

1) What are the perceptions of undergraduate admission professionals at four-year postsecondary institutions of their use of DDDM?

2) What are the characteristics of those individual undergraduate admission professionals who are using DDDM and those who are not using DDDM?

3) If undergraduate admission professionals are using DDDM, in what ways are they using DDDM?

4) What level of confidence do undergraduate admission professionals have in their ability to use DDDM?
In order to address these questions, a survey instrument was designed to assess the knowledge and habits of undergraduate admission professionals in terms of DDDM. The results collected by this instrument provided empirical information which is the basis for a discussion about what specific knowledge admission professionals at four-year institutions possess and how they use data in their decision making. The survey included questions to collect demographic and background information about the individuals and the institutions at which they are employed. This information is utilized to determine if there are any common characteristics shared by those professionals who use data in their decision making and those who do not. In addition, the survey included questions relating to the respondents’ use of data in day-to-day decision making, resources available to aid the respondents in using data, and the respondents’ confidence level with using data.

Definitions

In practice, DDDM is a complex issue with many dimensions. Throughout the literature, there are many terms used to describe the phenomenon of using data to make decisions. These include: data-driven decision making, data informed decision making, data based decision making, evidence-based decision making, assessment, research, and accountability. However, for the purposes of this study, the term data-driven decision making (DDDM) will be used. Along with a variety of terms, there are a variety of definitions used to describe DDDM. For this study, DDDM will be defined as education professionals systematically collecting and analyzing various types of data (including assessment data, relevant demographic information, input, process, outcome and satisfaction data) to support the decision making process and to improve the resulting outcomes of those decisions (Marsh, Pane & Hamilton, 2006).
Another key term for this study is higher education professional. For the purposes of this study, higher education professionals will be defined as staff who are not classified as faculty at a college or university and work in some capacity to provide services to students—college student personnel. For instance, those employed in admissions, financial aid, career services, the registrar, residence life and student services would all be defined as higher education professionals. More specifically, this study will utilize a sample of admission professionals. Admission professionals were selected for this study because they are responsible for admitting prospective students. Students, through their tuition, provide a significant revenue stream to colleges and universities. Therefore, admission decisions directly affect the financial health of an institution. To maintain financial security, it is crucial for admission professionals to make sound and accurate decisions. Admission professionals can use data to provide guidance and rationale for their decision making processes.

Implications

The knowledge, or lack thereof, those in the field of education possess regarding how to properly use data to make decisions can hinder their use of DDDM (Hutchinson & Lovell, 2004; Mandinach & Honey, 2008a; Mandinach & Honey, 2008b). Professionals cannot effectively use data to make informed decisions when they do not understand the data or the analysis of the data.

The current literature clearly illustrates there is a gap between the knowledge education professionals possess and that which they need in order to practice DDDM at their institutions (Hutchinson & Lovell, 2004; Mandinach Honey, 2008a; Mandinach & Honey, 2008b). However, more information needs to be collected to guide future research and training. The survey disseminated in this study collected empirical
information and seeks to address this gap in the literature.

No Child Left Behind (NCLB) is often cited as the impetus for creating an expectation of DDDM in K through 12 education (Mandinach and Honey, 2008b). For this reason, much of the literature discussing DDDM relates to K through 12 education. Conversely, less has been published about higher education and how DDDM can be utilized in this setting. This dearth of literature can be largely attributed to the absence of an overarching accountability structure, like NCLB, for the higher education community. Unlike NCLB, there is no large-scale insistence for colleges and universities to justify their decisions with data in any formal way. Accrediting agencies have provided some accountability for colleges and universities, but only recently have they required significant use of DDDM (Jenkins & Kerrigan, 2008; Shavelson, 2010). Therefore, the demand for literature regarding DDDM in higher education has been low.

However, there is a growing body of literature regarding DDDM in higher education. This increase is due, in large part, to the release of a 2006 United States Department of Education report, *A Test of Leadership: Charting the Future of U.S. Higher Education*. In this report, the Department found fault with higher education in six major areas, including: access, cost and affordability, financial aid, learning, transparency and accountability, and innovation. Specifically, the report cites a need for higher education institutions to improve operating efficiency which will, in turn, improve affordability of higher education (U.S. Department of Education, 2006). The report addresses the issues of transparency and accountability as one of the major areas needing improvement in higher education. The Department of Education report highlights the fact that the current system of higher education in the United States has no way to provide either adequate internal accountability systems or effective public information. Too many
decisions about higher education—from those made by policymakers to those made by students and families—rely heavily on reputation and rankings derived to a large extent from inputs such as financial resources rather than outcomes. Better data about real performance and lifelong working and learning ability is absolutely essential if we are to meet national needs to improve institutional performance. (U.S. Department of Education, 2006, p.13). Ultimately, the report raised a multitude of questions for higher education institutions and sparked conversations about the meaning of assessment and accountability in higher education.

The rising prices of college tuition and the demand for greater transparency and accountability of organizations are making DDDM an increasingly urgent issue in higher education. Addressing this call for accountability is going to be a daunting task for higher education institutions. It will require institutions to develop a culture of DDDM and require higher education professionals to become versed in various data analysis techniques in order to effectively make data-driven decisions. This will mean that not only have educators been charged with making sound decisions about educating our students, investing our resources and producing positive results, they are now also required by the public, the media, parents and students to show how and why they arrived at those decisions. Intuition and expertise no longer suffice.

College and university administrators are under public pressure to allocate resources efficiently and effectively. So how can administrators ensure due diligence in their decision making process? One way is to use data to make their decisions. However, if they do not possess adequate knowledge regarding how to use data, this process is hindered. The result could be that the data and subsequent analyses are unintentionally misused. Simple statistics, such as the mean, could be misreported or
not reported in their entirety. This incomplete reporting of data can affect the way in which it is interpreted and, in turn, used to make decisions. Poor analysis leads to poor decision making. In the current economic and political climate, higher education professionals cannot afford to make poor decisions.

**Summary**

Increasing demands for accountability from both the public and the government have resulted in increasing pressure for admission professionals to use data to support their choices. There is significant speculation that professionals at all levels of education lack the knowledge to implement DDDM. However, empirical studies regarding whether or not professionals at four-year postsecondary institutions are utilizing data to guide programmatic and policy decisions are lacking. Determining the current use of DDDM in higher education among professional staff will be a contribution to the existing literature. This exploratory study provides an empirical assessment of the knowledge undergraduate admission professionals at four-year postsecondary institutions possess, how they use data in their decision making and their level of confidence in using data. The literature regarding DDDM in higher education is small, but growing. This study can be used as a platform from which to conduct further research and training regarding admission professionals and DDDM.
Chapter Two

**Literature Review**

Although data-driven decision making (DDDM) is a relatively new phrase in the field of education, classroom teachers have actually practiced it for hundreds of years. Teachers have collected various data points in their classrooms through tests, quizzes and homework and have used those data to make decisions about grades and promotions. “What is new, however, is that data are inextricably coupled with accountability” (Mandinach and Honey, 2008, p.2). Trow (1996) defines accountability as “the obligation to report to others, to explain, to justify, to answer questions about how resources have been used, and to what effect” (p. 310). This coupling of data and accountability has given DDDM an urgency that has not previously existed in the field of education. This has been particularly striking in higher education, a field that has been slow to implement DDDM on a large-scale. This sluggishness to implement DDDM is due in large part to the lack of a single accountability system or legislation for higher education mandating its use. It is for this same reason there is a small, but growing body of literature regarding DDDM in higher education.

Higher education professionals are being required to answer this call for increased accountability. Within this accountability movement, the emphasis is clearly being placed on producing data to support decision making. Impeding this movement of accountability is the lack of knowledge those in education possess about how to use data to make decisions (Bettesworth, Alonzo & Duesbery, 2009; Fusarelli, 2008, Hutchinson & Lovell, 2004; Mandinach & Honey 2008). Very few empirical studies have been conducted to determine the level of knowledge professionals, particularly those at four-year colleges and universities, posses in terms of using data to make decisions.
This study addresses this gap in the literature.

There are two challenges when researching the field of DDDM. First, is a lack of cohesiveness among researchers in using the same nomenclature. In attempting to research DDDM, there are a vast number of words and phrases used to describe the process of using data to make decisions. Relevant information can be found using search terms such as data based inquiry, data based decision making, data informed decision making, evidence-based decision making, accountability, assessment and research. For this study, the term data-driven decision making will be utilized. Second, the majority of the literature regarding DDDM focuses on K through 12 education (Jenkins & Kerrigan, 2008: Jenkins & Kerrigan, 2009). While relevant studies for higher education need to be conducted, the issues facing educators and administrators are often common across various educational settings. The concepts and ideas presented in the K through 12 research are frequently transferrable to higher education and vice-versa. The absence of empirical studies regarding DDDM in four year postsecondary institutions does offer an opportunity for this study to contribute to the literature.

In conducting an empirical study regarding higher education professionals’ use of data in decision making, it is important to examine four areas of the literature. In order to understand the need for DDDM in higher education, an overview of the history of accountability in higher education is pertinent. This information will aid in framing this study and giving context to the need for studies such as this. It will also provide insight into the current landscape of higher education institutions. Second, a summary of current studies (including the few pieces of research utilizing quantitative methods) addressing professionals’ use of data in decision making is beneficial. Third, a discussion of professionals and the gap between research and practice will illustrate the importance of
higher education professionals having the knowledge to utilize data and, in effect, conduct their own research to make decisions in their roles. The final section of this review will examine a framework for DDDM and an overview of item response theory utilized in the analysis of the data.

**Overview of Accountability in Higher Education**

The No Child Left Behind (NCLB) Act of 2001, mandated states to examine the standardized test scores of K through 12 public school students. Under NCLB, schools were rewarded or penalized based upon improvements or decreases in student test scores. NCLB required schools and administrators to produce evidence to document and support their curricular and programmatic choices. This legislation gave a clear directive for K through 12 schools to implement and utilize data in decision making in an attempt to improve student outcomes. However, a similar overarching call for accountability was missing for postsecondary institutions.

Since their inception, higher education institutions in the United States have enjoyed a great level of autonomy, both in assessment and accountability. There is no single test or system which determines the criteria for a successful college student. Each college and university is entitled to determine its own measures of success and award degrees based upon those measures. Accreditation has served as the primary source of accountability for colleges and universities for the past 100 years (Huisman & Currie, 2004; Shavelson, 2010; Jenkins & Kerrigan, 2008). Until recently, accreditation did not require institutions to utilize data to support their decisions. Accreditation agencies such The Southern Association of Colleges and Schools and the North Central Association of Colleges and Schools are embracing the quality improvement movement by requiring institutions to collect data and use that data to inform their decisions regarding problem
areas. These agencies are also encouraging institutions to continuously participate in formative evaluation processes (Jenkins & Kerrigan, 2008).

There is little doubt that pressure for higher education institutions to support their decisions with data has been building for the last two decades (Dwyer, Millett & Payne, 2006; Jones & Kerrigan, 2008; Jones & Kerrigan, 2009). But, it was not until the release of the 2006 United States Department of Education report, *A Test of Leadership: Charting the Future for U.S. Higher Education* that an explicit call for large-scale action from higher education institutions was made. In response to the skyrocketing costs of higher education, not only are local, state, and federal governments calling for increased transparency and information from taxpayer supported colleges and universities, but so is the public at large (Huisman & Currie, 2004; Jenkins & Kerrigan, 2008; Jenkins & Kerrigan, 2009; Leveille, 2006; Shavelson, 2010; U.S. Department of Education, 2006). Educators at all levels are being asked to support their decisions with more than intuition and expertise. Now they must also offer data that supports their decisions to their various constituencies. Most higher education professionals recognize DDDM needs to occur. The problem arises in the actual implementation of DDDM within their day-to-day work.

**DDDM and Higher Education Professionals**

Ultimately, the effective use of data can aid education professionals in improving outcomes for their institutions. A common criticism of the field of education is the lack of hard knowledge and scientific research produced by its scholars (Labaree, 1998; Slavin, 2002).

According to Phillip Streifer (2004), it is not that educators “fail to ask the right questions, but that [educators] do not know how to deconstruct [the] questions into doable analyses (or subqueries) using sound research principles and techniques” (p. 2).
Multiple studies cite administrators’ lack of knowledge regarding data use and analysis (Bettesworth, Alonzo & Duesbery, 2009; Fusarelli, 2008, Hutchinson & Lovell, 2004; Mandinach & Honey 2008).

Beyond a lack of knowledge, Fusarelli (2008) contends that educators tend to encounter significant barriers when using data in decision making. These include the contextual issues surrounding education research, particularly the difficulty in replicating studies due to differences in context. The sense of distrust among educators regarding research is another barrier to utilizing data and research in education. Additionally, problems of incomplete information and an absence of a culture promoting research-based decisions are also obstacles to using data and research in decision making. The uneven quality of available research and individual issues, such as lack of knowledge about data and analysis, impede the use of data for school leaders (Fusarelli, 2008). However, Fusarelli (2008) asserts that when school leaders do utilize research, they tend to use generalizations and concepts presented in research, not specific studies.

Few studies address specifically what higher education professionals know and how they use data. There are even fewer empirical studies that have been conducted regarding the knowledge and use of data by professionals within the context of DDDM in higher education (Fusarelli, 2008; Jenkins & Kerrigan, 2008; Jenkins & Kerrigan, 2009). Jenkins and Kerrigan (2008) in conjunction with the Community College Research Center address this very issue in Evidence-Based Decision Making in Community Colleges: Findings from a Survey of Faculty and Administrator Data Use at Achieving the Dream Colleges. Jenkins and Kerrigan were the first to investigate and provide empirical evidence regarding higher education professionals’ knowledge of data and how they use data in their daily decision making (Jenkins & Kerrigan, 2008). The authors administered
a survey to administrators working with the Achieving the Dream program at 41 community colleges. The actual instrument was not included in the published study and reliability for the instrument was not reported. The authors used the response data to create four indicators of data use and correlative factor measures. Ultimately, the authors found considerable variation regarding the extent to which respondents used data. Additionally, even though some administrators used data extensively, the study revealed that although initial survey findings indicated comfort in analyzing data, follow-up interviews suggested administrators were not as comfortable with analyzing data as they had stated in the survey (Jenkins & Kerrigan, 2008).

In a 2006 study, Bettesworth examined the use of data and the self efficacy of K through 12 administrators in relation to using data to make decisions. Bettesworth examined the effects of participation in training sessions on the K through 12 educators’ use of data to inform instructional decisions. Bettesworth used two instruments—one to measure the participants’ knowledge of statistical concepts and one to measure their self efficacy in terms of data use. After comparing the results from a pre-test and post-test of both instruments, the author determined that while the ability to use data increased following the intervention, “feelings of efficacy must be addressed if there is a true desire to imbed the use of data in the every day practice of teachers and administrators” (Bettesworth, 2006, p.V).

In their 2004 article, Hutchinson and Lovell conducted a meta-analysis of methodological characteristics in published higher education research. The authors included a review of three leading higher education journals from 1996 to 2000 (For the purposes of this article, the authors defined these three journals as The Journal of Higher Education (JHE), Research in Higher Education (ResHE), and Review of Higher
Education (RevHE)). The team developed a coding scheme and coded the methodologies utilized in the articles into three major categories: basic, intermediate and advanced statistics. These categories coincided with the level of training a student would receive in a graduate program. Basic statistics would be those typically taught in the first semester, intermediate statistics would be those taught in a second or third semester course, while advanced statistics would be those that would require a fourth semester or beyond (Hutchinson & Lovell, 2004). The authors conclude “professionals require at least intermediate-level statistics to adequately comprehend most of the published research” (Hutchinson & Lovell, 2004, p.396). They also found that the methods presented in relevant research journals are becoming increasingly more sophisticated and would require statistical skills beyond an intermediate level course (Hutchinson & Lovell, 2004).

While the translation from research to practice is certainly not exact, this article begins to address the ability of education professionals to use research. This article discusses professionals’ knowledge in terms of understanding published research and not their knowledge in terms of using data to make decisions at the micro level. However, professionals are being called upon to use data and research to make their decisions. What is evident from all three of these studies is that a clearer understanding of how much knowledge and confidence individuals have regarding using data in decision making is crucial in moving research forward. Without the knowledge and confidence to use data in decision making, it will be impossible for any individual or organization to implement successful DDDM.
Practitioner-Researcher Gap

The ultimate goal of research in any field is to transform practice. Education is not an exception (Anderson, 2002). Yet, there is, without a doubt, a gap between research and practice. As has already been discussed, education professionals do not always possess the skills to initiate research of their own. Some researchers do not accept practitioner research as rigorous enough to be classified as formal or academic research (Anderson, 2002; Bensimon, Polkinghorne, Bauman, & Vallejo, 2004; Ranis, 2003). Concurrently, professionals or practitioners often do not find academic research useful in their work (Anderson, 2002; Dowd & Tong, 2007). It is this paradox that leads to discussing the professional or practitioner as a researcher. Often in this particular area of research, professionals are referred to as practitioners. These terms will be used interchangeably for the following discussion.

In response to the acknowledged gap between practitioners and researchers, Bensimon, et. al. (2004) introduced the practitioner-as-researcher model, which has “stakeholders produc[ing] knowledge within a local context in order to identify local problems and take action to solve them” (p.105). The proposed model stresses the ability to affect institutional change and contrasts with what the authors call the “traditional model” of research production, where researchers control the production of knowledge versus the practitioners (Bensimon, et al., 2004). In the practitioner-as-researcher model, researchers serve as consultants and facilitators to practitioners as they embark on projects. The authors found beyond the immediate ability to address the issue of inequity in educational outcomes, “participants developed a commitment to data-informed knowledge that extended beyond the immediate project and into other aspects of their professional work. Through their work as researchers, they came to recognize the superiority of knowledge derived from data over that which is based on anecdotal
evidence” (Bensimon, et al., 2004, p.117). In a 2007 article, Bensimon again stressed the importance of practitioners and the role they play in student outcomes. Bensimon (2007) focuses on the small amount of attention scholars tend to give the topic of how practitioners affect higher education and student outcomes. As the pressure to conduct DDDM and answer questions of accountability increases, the practitioner as researcher becomes a more practical model.

In “Accountability, Assessment, and the Scholarship of ‘Best Practice’” (2007), Dowd and Tong again propose a model of practitioner as researcher. The researchers assert that a strength of this model is that programs and practices in education often are not transferrable and involving practitioners in research allows them to determine what programs and practices are successful in their own settings (Dowd & Tong, 2007). As was discussed earlier in this chapter, Fusarelli (2008) also cited the difficulty in replicating studies in education due to differences in context. Programs and practices that are successful in one institution may not be so in another. Recognizing the practitioner as researcher, empowers those in the field to assess, evaluate and ultimately make data-driven decisions.

**Framework of Data-Driven Decision Making**

In 2008, Mandinach and Honey introduced a conceptual framework for data-driven decision making. In particular, their framework addressed the process of transforming data into usable knowledge that is then acted upon (Mandinach & Honey, 2008). Mandinach and Honey base their framework on the research of others such as Ackoof (1989) and Light (2004) (Mandinach & Honey, 2008). Fundamentally, the framework asserts that DDDM is based on a continuum in which “data are transformed to information and ultimately to knowledge that can be applied to make decisions” (Mandinach & Honey, 2008, 21). Each transformation is associated with two relevant
skills practitioners need to possess in order to move data along the continuum.

Mandinach and Honey’s framework includes three specific phases: data, information and knowledge. In the first phase, “data exist in a raw state” (Mandinach & Honey, 2008, 20). Data do not have meaning until the person looking at the data imparts meaning to it. At this level, an individual must be able to collect and organize. However, for data to be transformed to information, an individual must have the ability to analyze and summarize. Data is transformed to information when it is understood within a context. Finally, knowledge is “the collection of information deemed useful and eventually used to guide actions” and is created through synthesis and prioritization (Mandinach & Honey, 2008, 21).

Mandinach and Honey’s knowledge pipeline provides a strong theoretical framework for assessing education professionals and their use of and attitudes toward DDDM. However, translating that framework directly into practice is not always practical. Without a fundamental understanding of DDDM and the framework, it is difficult to impart the subtle differences between data, information and knowledge in a survey format. As has been discussed earlier, generally educators have little knowledge of DDDM, data, statistics, measurement, assessment and evaluation. To a professional in the field, it is possible these three terms could be almost interchangeable. Therefore, for the purposes of this research and to make these concepts relatable and clear, respondents were asked about specific types of data, data analysis and research in order to explore their relationship with DDDM. These categories generally align with the Mandinach and Honey framework. For instance, rather than asking about admission professionals generally use “data” in their work, the survey contains a set of questions asking about specific raw data
points. Rather than asking about information, the survey contains questions about how admission professionals use data analysis. Finally, respondents are asked to evaluate how frequently they utilize institutional research, outside research and third party research to make decisions in their roles. These questions align with Mandinach and Honey’s concept of knowledge.

The majority of the survey instrument focuses on what data and analytical products professionals use in DDDM and how often they utilize these items. Because there is very little existing research in this field, the information collected through the survey instrument is intended to help determine if admission professionals are even using DDDM in their work and, if so, how frequently. It will provide baseline information for further research. Therefore, only one question relates to specific skills professionals possess related to DDDM. Here, again, Mandinach and Honey’s framework would not translate into meaningful questions for admission professionals. Therefore, rather than asking about their ability to collect, organize, analyze, summarize, synthesize and prioritize, respondents are asked about their level of confidence in conducting and interpreting data analysis and interpreting various types of research.

Mandinach and Honey provide a useful theoretical framework for DDDM. However, theoretical frameworks are often difficult to translate into practice, especially when little familiarity may exist within the population about the basic tenets of a concept, as is the case with DDDM. While the questions in this survey align with the framework presented, they do not directly incorporate it in an attempt to make the survey accessible to respondents.
**Item Response Theory: A Measurement Approach**

Fundamentally, Classical Test Theory (CTT) focuses on the test or survey at hand and the single score obtained by the individual on that particular instrument. It also assumes all items are parallel or of equal value (Bond & Fox, 2007; Kline, 2005). Because CTT focuses on the test or survey as a whole, item statistics that are calculated can only be applied to the sample from which they were generated. Item Response Theory (IRT) models, such as Rasch modeling, focus on the individual items and patterns in the responses to those items. Furthermore, the Rasch model is also referred to as a latent-trait model. Latent-trait models attempt to examine the underlying trait the instrument is measuring, rather than the performance on the particular instrument or test. With Rasch measurement, the focus on the trait, rather than the performance, allows the analysis to be used beyond the specific test administration. It is for this reason that Rasch modeling is often referred to as sample-free measurement (Bond & Fox, 2007; Wright & Stone, 1979).

In regards to analyzing survey data, CTT is inherently flawed. Survey data is generally regarded as “soft” or subjective data since it often represents the thoughts and perceptions of individuals rather than “hard” data. CTT assumes parallel construction of the response categories. For example, if a scale measuring confidence is labeled from one to five, with one representing “Strongly Disagree” and five representing “Strongly Agree”, CTT assumes that a respondent answering “Strongly Agree” is five times more confident than the respondent answering “Strongly Disagree”. However, the scale is subject to the interpretation of the individual. CTT disregards this subjectivity in the data and assumes that all response categories are equal (Bond and Fox, 2007).

As was previously discussed, IRT, such as the Rasch model “does not presume the size of the step necessary to move across the threshold. It detects the threshold structure
of the Likert scale in the data set, and then estimates a single set of threshold values that apply to all of the item stems in the scale” (Bond and Fox, 2007, p. 106). IRT acknowledges the subjective nature of the survey data and establishes both graphically and empirically the true difference between the choices and how much more or less difficult it is for subjects to endorse an item.

The one parameter IRT model, or Rasch model, is the most parsimonious model to use for the purposes of this study. The Rasch model simply examines item difficulty, while two parameter models include item discrimination and three parameter models include guessing, in addition to item difficulty. In this study, item difficulty is truly the only parameter of interest. Since this survey instrument is measuring perceptions of admission professionals, item discrimination, or the ability of an item to differentiate individuals’ ability, is not relevant. In the same manner, guessing will not be an issue since there is no right or wrong answer for these questions. Again, the items are simply measuring the individual’s perception of themselves.

The Rasch Measurement Theory was first introduced by George Rasch in 1960 with his formulation of *Probabilistic Models for Some Intelligence and Attainment Tests* (Wright & Stone, 1979). Central to the Rasch model is the ability to address this extremely simple question: “When a person with this ability (number of test items correct) encounters an item of this difficulty (number of persons who succeeded on the item), what is the likelihood that this person gets this item correct? Answer: The probability of success depends on the difference between the ability of the person and the difficulty of the item” (Bond & Fox, 2007, p.10).

In its most basic form, the Rasch model can be applied to dichotomous data. However, extending the Rasch model allows researchers to apply it to polytomous data, such as the Likert and other rating scales often used in survey instruments.
Rasch modeling creates an interval measurement scale that allows comparisons that can be “interpreted as ‘how much difference’ exists between any two locations in probabilistic terms” by looking at two facets: person ability and item difficulty (Bond and Fox, 2007, p. 48). In the case of rating scale data, this translates to a respondent’s willingness to or the likelihood of endorsing an item in a positive way. Rasch measurement not only allows researchers to draw conclusions regarding a difference between two individuals, but also offers the tools to make statements about the magnitude of these differences. The results of Rasch analysis can also aid in evaluating the quality of the survey instrument by examining output, such as item misfit.

As with any model, the Rasch model has assumptions which must be upheld in order to utilize the model. Fundamentally, the Rasch model is based upon the idea that the instrument is only measuring one attribute at a time. This is referred to as unidimensionality. Specifically, fit statistics “help the investigator to ascertain whether the assumption of unidimensionality holds up empirically” (Bond & Fox, 2007, p. 35). The second assumption is that each person is characterized by ability and each item by difficulty. Each of these characteristics can be “expressed by numbers along one line” (Bond & Fox, 2007, p. 26).

The Rasch model offers different measures of assessing the reliability of the instrument when compared to CTT. Specifically, two indices—person and item—measure reliability. The person reliability index is a measure of the likelihood that respondents would be ordered in a similar fashion if the same group of respondents were given similar items measuring the same construct (Bond & Fox, 2007; Wright & Masters, 1982). The item reliability index is a measure of the likelihood that items would be ordered in a similar manner if the items were given to another group of respondents.
The Rasch model also offers an alternative method of measuring the validity of an instrument: fit statistics. Fit statistics can be used to determine if the construct being measured is truly unidimensional—an underlying assumption of the Rasch model (Bond & Fox, 2007). Fit statistics offer an empirical method for researchers to confirm or refute this assumption for a given set of items.

**Summary**

Large-scale use of DDDM in higher education has been on the horizon for the last two decades. But, it was not until the 2006 report from the United States Department of Education, *A Test of Leadership: Charting the Future for U.S. Higher Education*, that a formal call was made for higher education institutions to utilize data to support their decisions. This report coincides with a shift by accrediting agencies. Not only are agencies requiring institutions to provide data on student outcomes, they are pushing for institutions to show how they are using the data to address problems and derive solutions from the evaluation of the data.

With these requirements looming, higher education administrators need to be able to use data in their decision making processes. It is widely accepted that most administrators do not have the skills or confidence to do this. However, empirically, there are few studies that show exactly if, when and how higher education professionals use data in their work. This study, through the administration of a survey instrument, will inform both researchers and professionals and provide crucial pieces of information in moving forward with training and research regarding DDDM in higher education.
Chapter Three

Methodology

Purpose of the Study

As has been discussed in previous chapters, data-driven decision making (DDDM) is becoming a required practice for educators, from the kindergarten classroom to postsecondary institutions. Educators can no longer offer intuition and expertise as the sole rationale for making decisions. They must instead collect and analyze relevant data and present their results to support their choices. While using data to make decisions has informally existed in education for hundreds of years, a new urgency has emerged as institutions at all levels are held to high accountability standards by the public and the government.

Legislation, such as No Child Left Behind (NCLB), has given momentum to DDDM research in K through 12, but until recently, there has not been a similar movement in higher education. There exists a deficiency in relevant higher education literature which can be attributed to the absence of an overarching accountability structure, like NCLB, in higher education. However, in 2006, A Test of Leadership: Charting the Future of U.S. Higher Education was released under the direction of then Secretary of Education, Margaret Spellings. This report cited a need for increased transparency and accountability among higher education institutions and instigated an increase in discussion and research in the area of DDDM within higher education.
Consistently, one of the major barriers to implementing DDDM in any educational setting is educators’ lack of knowledge regarding data use and analysis (Bettesworth, Alonzo & Duesbery, 2009; Fusarelli, 2008, Hutchinson & Lovell, 2004; Mandinach & Honey 2008).

While there is a growing body of literature regarding higher education professionals and their use of data in decision making, the literature does not currently include empirical studies examining the use of data in decision making by higher education professionals at four-year institutions. The purpose of this study is to explore the perceptions of undergraduate admission professionals (a subset of higher education professionals) at four-year postsecondary institutions regarding their use of data and DDDM using the survey instrument developed for this study.

**Research Questions**

This study is guided by the following questions:

1) What are the perceptions of undergraduate admission professionals at four-year postsecondary institutions of their use of DDDM?

2) What are the characteristics of those individual undergraduate admission professionals who are using DDDM and those who are not using DDDM?

3) If undergraduate admission professionals are using DDDM, in what ways are they using DDDM?

4) What level of confidence do undergraduate admission professionals have in their ability to use DDDM?

A survey instrument was designed to address the research questions. First, the instrument was fielded on a small scale to determine face and content validity. The results from this dissemination and feedback from an expert panel review of the instrument were used to revise the survey instrument. Before the final data was summarized and analyzed,
Rasch analysis was performed on the survey instrument to determine the reliability and validity of the final instrument and the data collected from it. The results of this exploratory study yielded baseline empirical data and insights into how admission professionals use of data in their decision making. Findings from this study can be used to launch further research on this topic.

**Sampling Frame**

A nonprobability, purposive or judgmental sampling design was utilized in this study. The sample is a homogeneous group of undergraduate admission professionals who are members of the National Association for College Admissions Counseling (NACAC). NACAC is a non-profit organization comprised of undergraduate college admission professionals and secondary school guidance and college counselors. As of October 2011, NACAC had 12,001 members worldwide, and 5,839 of those members were employed at post-secondary institutions. The remaining 6,223 members are secondary school counselors, independent education consultants, secondary school administrators, and employees of non-profit organizations and for-profit companies that provide services related to college admissions.

Because of the exploratory nature of this study, all NACAC members at four-year institutions were included in the sample. Of the 5,839 postsecondary members, 5,100 identify themselves as being employed at four-year institutions. In the fall of 2011, NACAC provided an email address and name of the employer of each member who identified themselves as being employed at a four-year college or university. These 5,100 members represent 1,388 unique institutions. Eighty-eight individuals were removed from the list because they indicated they did not reside in the United States. A total of 5,012 members were sent the survey.

College student personnel, such as those employed in the offices of admissions,
financial aid, the registrar, and student services, are charged with reporting key data points to the public and managing significant financial resources. Admission professionals have been specifically chosen as the sample for this study for two reasons. First, they are often the first representatives encountered by the public at a college or university. Admission professionals are responsible for presenting vital data points, such as academic profile, average scholarship amounts, average financial aid packages and other data to the public for their institutions. Second, admission professionals are responsible for selecting and admitting prospective students. Tuition from these students is typically a major revenue stream for institutions of higher education. Therefore, on an institutional level, it is crucial for admission professionals to make sound decisions. Poor decision making in an admission office can undermine the financial security of an institution. Determining whether or not admission professionals in higher education use data to make decisions and how confident they feel in using data can inform future research and training. The results of this study can serve as a platform to begin assessing the quality of the information being provided to the public.

According to the 2011 Integrated Postsecondary Education Data System (IPEDS), there are 1,783 four-year accredited colleges and universities in the United States. Institutions were included using the following criteria: United States (U.S.) only, four-year, not-for-profit, Title IV participating and baccalaureate degree-granting. NACAC members represent 75% of the four-year colleges and universities in the United States. While the NACAC membership list is not a comprehensive list of all admission professionals employed at four-year colleges and universities in the United States, it is deemed a sufficient sample to conduct the exploratory survey in this study.

Response Frame

A total of 1,071 professionals responded to the survey instrument, which was
administered in November 2011, for a response rate of 21.4%. A response was defined as any respondent who answered the first question on the survey instrument (See Appendix A). The first two questions included on the survey instrument were screening questions to determine whether or not the respondent was qualified to participate in the study. Of the respondents, 10 respondents were removed from the study because they answered the first question in a way which disqualified them from participating in the study—they indicated they were not employed at a four-year college or university. In addition, 26 respondents were removed from the study because they answered the second question of the study with a negative answer—they primary role is not in admissions or enrollment management. Finally, seven more respondents were removed from the student because they did not answer the second question. The removal of these participants left a sample of 1,028 respondents. However, the survey administered in this study was of considerable length and it was anticipated that the length would decrease the number of complete surveys received. Therefore, throughout this study the \( n \), or number of respondents for a particular question is reported when reporting statistics about that question. Tables 3.1, 3.2, 3.3 and 3.4 display demographic information about the respondents and their respective institutions.
Table 3.1

*Summary of Respondents’ Professional Background*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admissions Counselor</td>
<td>129</td>
<td>12.50%</td>
</tr>
<tr>
<td>Assistant Director</td>
<td>199</td>
<td>19.40%</td>
</tr>
<tr>
<td>Associate Director</td>
<td>227</td>
<td>22.10%</td>
</tr>
<tr>
<td>Director</td>
<td>218</td>
<td>21.21%</td>
</tr>
<tr>
<td>Chief Admissions Officer</td>
<td>71</td>
<td>6.90%</td>
</tr>
<tr>
<td>Chief Enrollment Officer</td>
<td>140</td>
<td>13.60%</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>2.40%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>19</td>
<td>1.80%</td>
</tr>
<tr>
<td><strong>Time in field</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one year</td>
<td>14</td>
<td>1.40%</td>
</tr>
<tr>
<td>One to three years</td>
<td>68</td>
<td>6.60%</td>
</tr>
<tr>
<td>Four to six years</td>
<td>94</td>
<td>9.10%</td>
</tr>
<tr>
<td>More than six years</td>
<td>438</td>
<td>42.60%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>414</td>
<td>40.30%</td>
</tr>
</tbody>
</table>

Note: N=1,028
Table 3.2

*Summary of Respondent Demographics*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>278</td>
<td>27.00%</td>
</tr>
<tr>
<td>Female</td>
<td>330</td>
<td>32.10%</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>11</td>
<td>1.10%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>409</td>
<td>39.80%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 to 25 years old</td>
<td>41</td>
<td>4.00%</td>
</tr>
<tr>
<td>26 to 30 years old</td>
<td>115</td>
<td>11.20%</td>
</tr>
<tr>
<td>31 to 34 years old</td>
<td>81</td>
<td>7.90%</td>
</tr>
<tr>
<td>35 to 39 years old</td>
<td>93</td>
<td>9.00%</td>
</tr>
<tr>
<td>40 to 44 years old</td>
<td>83</td>
<td>8.10%</td>
</tr>
<tr>
<td>45 years or older</td>
<td>197</td>
<td>19.20%</td>
</tr>
<tr>
<td>Prefer not to answer</td>
<td>10</td>
<td>1.00%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>408</td>
<td>39.70%</td>
</tr>
</tbody>
</table>

Note: N=1,028
### Table 3.3

**Summary of Respondents’ Educational Background**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Degree Completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's</td>
<td>212</td>
<td>20.60%</td>
</tr>
<tr>
<td>Master's</td>
<td>355</td>
<td>34.50%</td>
</tr>
<tr>
<td>Doctoral</td>
<td>46</td>
<td>4.50%</td>
</tr>
<tr>
<td>Professional Degree</td>
<td>4</td>
<td>0.40%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>0.50%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>406</td>
<td>39.50%</td>
</tr>
<tr>
<td>Current Education Endeavors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's</td>
<td>2</td>
<td>0.20%</td>
</tr>
<tr>
<td>Master's</td>
<td>95</td>
<td>9.20%</td>
</tr>
<tr>
<td>Doctoral</td>
<td>47</td>
<td>4.60%</td>
</tr>
<tr>
<td>Professional Degree</td>
<td>2</td>
<td>0.20%</td>
</tr>
<tr>
<td>Non degree seeking</td>
<td>11</td>
<td>1.10%</td>
</tr>
<tr>
<td>Not currently pursuing any degree</td>
<td>425</td>
<td>41.30%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>446</td>
<td>43.40%</td>
</tr>
</tbody>
</table>

Note: N=1,028
Table 3.4

*Summary of Institutional Characteristics of Respondents*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size of Undergraduate Enrollment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5,000</td>
<td>378</td>
<td>36.80%</td>
</tr>
<tr>
<td>5,001 to 15,000</td>
<td>143</td>
<td>13.90%</td>
</tr>
<tr>
<td>15,001 or more</td>
<td>94</td>
<td>9.10%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>413</td>
<td>40.20%</td>
</tr>
<tr>
<td><strong>Type of Institution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Institution</td>
<td>176</td>
<td>17.10%</td>
</tr>
<tr>
<td>Private Institution</td>
<td>435</td>
<td>42.30%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>0.00%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>414</td>
<td>40.30%</td>
</tr>
<tr>
<td><strong>Selectivity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly Selective</td>
<td>176</td>
<td>17.10%</td>
</tr>
<tr>
<td>Selective</td>
<td>263</td>
<td>25.60%</td>
</tr>
<tr>
<td>Traditional</td>
<td>117</td>
<td>11.40%</td>
</tr>
<tr>
<td>Liberal</td>
<td>42</td>
<td>4.10%</td>
</tr>
<tr>
<td>Open Enrollment</td>
<td>14</td>
<td>1.40%</td>
</tr>
<tr>
<td>I don't know.</td>
<td>5</td>
<td>0.50%</td>
</tr>
<tr>
<td>Did not respond</td>
<td>411</td>
<td>40.00%</td>
</tr>
</tbody>
</table>

Note: N=1,028
Although this study is exploratory in nature, it is appropriate to examine the
general representativeness of the respondents to determine if the results from this study can be
generalized to the population. In order to protect the privacy of respondents, very little
data was provided in the sampling frame. Additionally, to protect the respondents’
identities, they were not asked to provide their name or the name of their institution.
Therefore it is difficult, on an individual level to determine whether or not respondents
are truly representative of the population. However, respondents were asked to provide
some demographic information about their institution such as the size of the
undergraduate enrollment, the type of institution (public or private) and the selectivity of
their institution. The type and size of institutions of respondents can be compared to
population data about institutions in the United States that is available through the
*Integrated Postsecondary Education System (IPEDS).*

According to IPEDS, there are 1,213 four-year accredited, private, colleges and
universities in the United States. As was mentioned previously, there are 1,783 four-year
accredited colleges and universities in the United States. Therefore, about 68% of the
colleges in the United States are private while 32% are public institutions. Of the
respondents who answered this question (n=614), nearly 71% indicated they were
employed at private colleges or universities and 29% were employed at public
institutions. Three respondents indicated they were employed at a university that was
both public and private. Because respondents were not asked to provide the name of
their institution, it was not possible to do further research to determine in which category
the response belonged.

For the purposes of examining the representativeness of the sample, these three
respondents were not included. Therefore, the analysis had an n=611. Although the units
of analysis differ, Fisher’s exact test was used to determine if the proportions of the population were significantly different from those proportions in the sample. In terms of the distribution public and private institutions, the difference between the proportions was not statistically significant ($p=0.156$). The same test was used to examine the proportions of institutions by size. Again using the IPEDS database, 1,215 institutions or 68% have a student population of less than 5,000 students and almost 32% of institutions in the United States have more than 5,000 students enrolled. Sixty-one percent of respondents in this survey indicated their institution had an undergraduate enrollment of less than 5,000 students; while 39% of respondents indicated they were from an institution with more than 5,000 students. The proportions for size of institutions were found to be statistically significant ($p=0.005$). However, it is again important to note that the units of analysis here differ and that is a factor to consider.

Ultimately, the majority of respondents in this survey were employed at private colleges with an enrollment of less than 5,000 undergraduate students. The majority of higher education institutions in the United States are private colleges with less than 5,000 undergraduate students. Therefore, it seems that for the purposes of this exploratory study this sample is sufficient.

**Instrumentation**

A thorough review of the existing literature revealed an appropriate instrument did not exist for this study. Therefore, the first and, arguably, one of the most important steps in this study was to create and validate a relevant survey instrument (see Appendix A). While the final survey instrument contains questions pertinent to higher education admission professionals, it could easily be utilized as a strong foundation for generating survey instruments for other higher education professionals.
The process to develop this instrument was thoughtful and time intensive. Initially, the survey was drafted as part of an assignment for a graduate course. After review by faculty and other doctoral students in that course, a subsequent draft was intensely reviewed by two members of this dissertation committee. The instrument was then fielded using a sample of ten current admission professionals at various institutions within the state of Kentucky. The individuals selected for the initial dissemination of the survey instrument represented both public and private four-year institutions, men and women, various roles within admissions offices (admissions counselor, assistant director, associate director, director and chief enrollment officer) and various levels of education and time in the field. Individuals were asked to complete the online instrument and then provided feedback on the instrument and their experience either in-person or via email. This group was viewed as content experts and their feedback was used to validate the face and content validity of the instrument. Eight of the ten individuals responded. Based upon the feedback of these respondents, the most substantive change that was made to the survey was a change in the rating scales used. For those questions in the second section, (Questions 4, 6, 8, 10 and 12), the rating scales were changed to reflect frequency of use rather than the Likert-type scale provided in the initial survey. The final instrument was fielded a second time to four of the ten original admission professionals. Again, the respondents provided their feedback in-person and via email. No substantive changes were made to the survey based upon the second round of feedback. Because of the changes made to the instrument after the initial fielding, all eight respondents who participated in the pilot testing were included in the final sample.

In addition to the field test of the instrument, three experts in the field of measurement and assessment were contacted via email and requested to review the survey
instrument. Two of the three experts reviewed the initial version of the survey instrument and provided feedback via email. The experts provided suggestions such as clarifying the definition of the term “outside research” in the survey and restructuring *Question 15* to a forced ranking question. The experts concurred with the field test respondents and suggested using a frequency scale for *Questions 4, 6, 8, 10* and *12*. Revisions were made based upon the feedback from both the experts and the field test. The survey instrument was sent to the expert panel for a second review. After the second review of the instrument, the experts provided suggestions regarding wording and design. These suggestions were included in the final version of the survey instrument.

**Final Instrument**

The final instrument had a total of 35 questions, 113 individual items and took approximately twenty minutes for respondents to complete (this time estimate was based upon feedback from the field test respondents). For the purposes of discussion, the survey can be divided into five sections. The first section included the two screening questions which were used to verify the respondent was, in fact, currently employed at a four-year college or university and that they were also currently employed in the field of admissions. Once the respondent completed the first two questions successfully (by answering “yes”), the respondent was directed to the rest of the instrument. The second section included statements to be answered using a 4-point rating scale (1=Almost Never, 2=Seldom, 3=Often, and 4=Almost Always). These statements asked about the respondents’ use of various types of data in their decision making regarding different topics. The third section of questions included statements to be answered using a 4-point Likert-type scale (Strongly Agree, Agree, Disagree and Strongly Disagree).

These statements asked about the respondents’ confidence in using data in their decision making. The fourth section included skip logic that directed respondents to a
particular set of questions depending on whether or not they classified themselves as someone who used data-driven decision making. The fifth and final section included demographic questions about the individual and the institution at which they were currently employed, at the time of the survey. Because of the exploratory nature of this study, open-ended questions were included in sections 2, 3 and 4, in order to collect additional qualitative data.

Data Collection

The final instrument was disseminated via email using Survey Monkey™ software to admission professionals whose addresses were obtained from the NACAC membership list. Respondents were sent an initial email notifying them they would be receiving an email including a link to the survey in the next twenty-four hours and were asked to complete the survey. The email containing the survey link was sent twenty-four hours after the initial contact. A reminder was sent forty-eight hours after the survey (seventy-two hours after the initial invitation) in order to increase the response rate. All emails (See Appendix A) included a statement of confidentiality, consent information and contact information for the investigator and supervisor. The survey was closed to respondents two weeks after the initial dissemination.

The target response rate for this study, as determined in consultation with this dissertation committee, was 25% or 1,253 respondents. The actual response rate for this study was 21% (1,071 respondents). Based upon the literature, specifically the studies most closely aligned with this study, higher response rates should be expected (Bettesworth, 2006; Jenkins & Kerrigan, 2008). For instance, Jenkins and Kerrigan (2008) reported a response rate of 73% with n=2,209 administrators. However, these administrators were all involved in the same federal program, Achieving the Dream: Community Colleges Count. In addition, the instrument was administered by an outside,
third-party provider and involved up to eight contacts to non-responders via various methods of communication (Jenkins & Kerrigan, 2008). One communication was sent directly to college presidents asking them to encourage their faculty and administrators to participate (Jenkins & Kerrigan, 2008).

Due to lack of financial and human resources, this study was not able to engage a third-party provider to aid in dissemination of this survey instrument. Furthermore, no type of incentive compensation was offered nor was there compulsory participation in the study. Communication and requests for participation were only sent to respondents and not their supervisors or other university administrators. Respondents in this study, share common membership, but are not part of a single program. However, the respondents solicited in this study completed the instrument on a voluntary basis without compensation and with an interest in seeing the results from their peers-giving this study its own unique merit. Because of the exploratory nature of this study, the raw number of respondents (over 1,000) represented by the response rate was deemed sufficient.

**Data Analysis**

Data were analyzed using Microsoft Excel™ and Minitab™ software packages. Additionally, WINSTEPS™ (Linacre, 2011, version 3.73) software was utilized to analyze subsets of the data according to the principles of the Rasch model. Because this instrument was designed specifically for this study, Rasch analysis was applied to address the validity and reliability of the instrument and the resulting data before the research questions were answered. Only those questions included in the survey instrument which contained either rating scale responses or Likert-type scale responses were analyzed using the Rasch model.

The analyses of these data were conducted using a one-parameter Item Response Theory (IRT) model, or the Rasch Model. Because items in this analysis have
more than two response categories, an extension of the dichotomous Rasch model—the Andrich Rating Scale Model or a polytomous model was utilized. The algebraic or mathematical representation of this logarithm is: \( \log \left( \frac{P_{nik}}{1 - P_{nik}} \right) = B_n - D_i - F_k \), where \( P_{nik} \) is the probability of person \( n \) encountering item \( i \) in category \( k \), \( B_n \) is the person ability, \( D_i \) is the item difficulty and \( F_k \) is the difficulty of endorsing the \( k \)th threshold (Bond & Fox, 2007).

Results from the Rasch analysis provided data to address the overall reliability of each item (person and item reliability), how well each item functioned or fit the expectations of the Rasch model (infit and outfit statistics) and how well the response categories were utilized or functioned (category analysis). Rasch analysis also supplied information on whether or not the instrument was operating in the same way for different types of respondents (Differential Item Functioning). Finally, through Rasch analysis, the items were analyzed to determine whether or not each item was measuring one construct or dimension (Dimensionality analysis).

Following the validation of the survey instrument, additional analysis was conducted in order to answer the research questions set forth in this study. Chi-square statistics were calculated for many of the variables to determine statistical significance. Qualitative data collected through the instrument was used in three major ways. First, qualitative data was used to provide examples of themes and support the findings of the quantitative analysis. Second, answers to open-ended questions were used to contradict quantitative analysis, when quantitative and qualitative findings displayed different findings. Finally, qualitative data was collected in order to further assess the survey instrument and confirm that the survey content was valid and inclusive.
Summary

This chapter provides a comprehensive description of the methodology for this exploratory study. In order to ascertain the frequency of use, the levels of knowledge and levels of confidence among admission professionals at four-year colleges and universities in regards to their use of data in decision making, a survey instrument was disseminated. This instrument was designed specifically for this study. Four research questions are posited in this study. In addition, Rasch modeling, a type of Item Response Theory, was used to analyze response data in order to examine the validity and reliability of the instrument and resulting data. The next chapter will detail the results of this study.
Chapter Four

Results

Purpose of the Study

This chapter presents both the results of the Rasch analysis of the survey instrument designed explicitly for this study and the analysis of the data collected using the instrument. As a reminder to the reader, the results from this survey instrument are treated as ordinal, and a measurement model was used to analyze the data. Specifically, Rasch analysis was used to analyze response data in order to examine the validity and reliability of the instrument and resulting data. The data collected from the instrument offers insight into undergraduate admission professionals’ perceptions of their use of data-driven decision making (DDDM) and answers the four research questions guiding this exploratory study. This study focused on undergraduate admission professionals at four-year colleges and universities in the United States. The sample is a homogeneous group of undergraduate admission professionals who are members of the National Association for College Admissions Counseling (NACAC). NACAC is a non-profit organization comprised of undergraduate college admission professionals and secondary school guidance and college counselors. A total of 5,012 members from four-year colleges and universities were sent the survey instrument. One thousand and seventy responses were collected for a response rate of 21.37%. Respondents to the survey were asked questions related to their frequency of use, levels of knowledge and confidence in regards to their use of data in decision making.

One of the major obstacles to practicing DDDM in any educational setting is educators’ lack of knowledge regarding data use and analysis (Bettesworth, Alonzo & Duesbery, 2009; Fusarelli, 2008, Hutchinson & Lovell, 2004; Mandinach & Honey 2008). However, the current literature includes few large-scale, empirical studies
exploring the use of data by higher education professionals at four-year institutions (Morest & Jenkins, 2007; Jenkins and Kerrigan, 2008). It is difficult to advance research and training without knowledge of the current landscape. The results of this study will contribute to the small, but growing body of literature regarding higher education professionals and DDDM.

**Research Questions**

This study is guided by the following questions:

1) What are the perceptions of undergraduate admission professionals at four-year postsecondary institutions of their use of DDDM?

2) What are the characteristics of those individual undergraduate admission professionals who are using DDDM and those who are not using DDDM?

3) If undergraduate admission professionals are using DDDM, in what ways are they using DDDM?

4) What level of confidence do undergraduate admission professionals have in their ability to use DDDM?

**Instrument**

In order to collect baseline empirical data regarding DDDM and undergraduate admission professionals, a survey instrument was designed as a part of this study (See Appendix A). The instrument was fielded, and results from the initial dissemination, along with feedback from an expert panel review of the instrument, were used to revise the survey instrument. Since the instrument had not been fielded previously, Rasch analysis was used to assess the reliability and validity of the final instrument prior to using the data to answer the research questions set out in this study.
Validation of Survey Instrument

Eight of the thirty-five questions from the survey instrument were analyzed using Rasch analysis. Demographic questions and open-ended response questions are not appropriate for this type of analysis. The questions on the survey instrument were not all numbered, therefore, the purposes of the analysis, a variable key was created and included in the study (See Appendix B). Questions 4, 6, 8, 10, 12, 14, 21 and 24 from the survey instrument were analyzed using the Rasch model. Each question contained between six and eleven statements or items for respondents to rate using the rating scale provided. For the purposes of this study, “question” will be used to refer to the set of items and “item” will be used to refer to the individual statements within each question. Question 4 asked respondents to indicate the frequency with which they used various types of data to make decisions in their role in admissions. Questions 6, 8, 10, and 12 asked respondents to indicate the frequency of their use of various types of research (data analysis, institutional, third party and outside research) in making decisions about eleven different programmatic and policy areas related to their role in admissions. Questions 14 included items asking respondents to rate their own confidence regarding various skills related to using data. Question 21 was only for respondents indicating they used DDDM and asked respondents about the influences on their use of DDDM. Question 24 was only answered by respondents who indicated they did not use DDDM and asked them to rate items related to why they did not use DDDM.

At the outset of the survey, it was hypothesized that each question would need to be analyzed individually, because while all questions pertain to DDDM, they do not all measure one dimension or construct, which is a requirement for using Rasch analysis. However, in order to determine that each question was measuring a different dimension,
initially, all eight questions were analyzed together. Dimensionality analysis using Winsteps™ software showed that, in fact, multiple dimensions were being measured. The questions were then separated into two groups—questions using a frequency scale (‘Almost always’, ‘Often’, ‘Seldom’, ‘Almost Never’) and questions using a Likert-type scale (‘Strongly Agree’, ‘Agree’, ‘Disagree’, ‘Strongly Disagree’). Again, dimensionality analysis was generated and revealed that multiple dimensions were still being measured. After this second analysis, the data was divided by question (8 in total) and then analyzed. At this point the dimensionality analysis confirmed that each question was measuring a single construct. For each question, several measures were generated to assess the validity of the survey instrument: person and item reliability estimates, variable maps, and INFIT and OUTFIT measures for each item. In addition, the rating scale of each question was evaluated individually.

**Person and Item Reliability**

Indices for both person reliability and item reliability were calculated for all eight questions. The results are displayed in Table 4.1. Both statistics are interpreted on a scale of 0 to 1. The person reliability index describes the likelihood that the ordering of respondents would be similar if this same group was given “another parallel set of items measuring the same construct (Wright & Masters, 1982)” (Bond & Fox, 2007, p. 40).

The item reliability index indicates that if another group were given the same items, they would perform similarly. Table 4.1 also includes the number of items on which the Rasch analysis was calibrated. As was expected, fewer respondents completed the survey than initiated it. Therefore, questions placed later in the survey have fewer responses than those that appear earlier in the survey.

The person reliability indices for each question are lower than the item reliability
indices. Statistically, a person estimate of 0.5 or higher allows us to discriminate the population into one or two levels, which is sufficient for this exploratory study (Linacre, 2011). All of the person reliability indices are above 0.5.

Table 4.1

*Person and Item Reliability Estimates for Rasch Analysis*

<table>
<thead>
<tr>
<th>Question Content</th>
<th>$n$</th>
<th>Person</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data (Question 4)</td>
<td>878</td>
<td>0.68</td>
<td>1.00</td>
</tr>
<tr>
<td>Data Analysis (Question 6)</td>
<td>773</td>
<td>0.80</td>
<td>0.98</td>
</tr>
<tr>
<td>Institutional research (Question 8)</td>
<td>694</td>
<td>0.87</td>
<td>0.97</td>
</tr>
<tr>
<td>Third party research (Question 10)</td>
<td>629</td>
<td>0.84</td>
<td>0.97</td>
</tr>
<tr>
<td>Outside research (Question 12)</td>
<td>636</td>
<td>0.89</td>
<td>0.99</td>
</tr>
<tr>
<td>Level of Confidence (Question 14)</td>
<td>673</td>
<td>0.82</td>
<td>0.99</td>
</tr>
<tr>
<td>Uses DDDM (Question 21)</td>
<td>521</td>
<td>0.72</td>
<td>0.99</td>
</tr>
<tr>
<td>Does Not Use DDDM (Question 24)</td>
<td>100</td>
<td>0.68</td>
<td>0.86</td>
</tr>
</tbody>
</table>
Item reliability estimates for each question, except for Question 24, are above 0.95. This indicates that most of the questions would yield similar results if administered to a similar sample. Question 24 has a lower item reliability index (0.87). This is most likely due to the small sample size associated with this question--only 100 respondents completed this question.

**Rating Scale Analysis**

When evaluating the validity of a survey instrument, it is important to analyze the effectiveness and utility of the rating scale provided to respondents. Rating scales can affect the quality of the data collected. For each of the eight questions, rating scale diagnostics were conducted. For seven of the eight questions (Questions 4, 6, 8, 10, 12, 21 and 24), analysis found the categories were not disordered or that respondents were able to utilize the categories in an ordinal pattern. All INFIT and OUTFIT mean square values were between -2 and 2, which indicates that the rating scales are functioning in a useful way. Furthermore, probability curves for each question were examined, and it was found that each had a distinct peak on the graph, indicating the categories are useful in defining a point on the variable (Bond & Fox, 2007).

One question showed slightly different results. For Question 14 (items relating to the confidence of respondents in their skills), Category 1 (“Strongly Disagree”) had an OUTFIT of 2.59, a high mean-square statistic. This finding indicates more misinformation than information or more unexplained noise than explained noise in the observations (Linacre, 1999). A closer examination shows this category was only utilized 23 times over the course of 6 items and 623 respondents. The high OUTFIT mean-square indicates this category had been used in an unexpected way--the observations were unpredictable based upon the model.
This issue could be addressed in different ways. The data could be omitted from the final analysis, or the category ‘Strongly Disagree’ could be collapsed into the “Disagree” category. However, since this study is exploratory in nature and there is some response bias (this will be discussed further in Chapter 5), the data will be included in the final analysis and the category will not be collapsed.

**Item Misfit**

Fit statistics are used in Rasch analysis to indicate the difference between what is expected in the data and what is actually observed—how well the data fit the model. Linacre (2011) states there are three general principles when evaluating item fit: 1) investigate OUTFIT before INFIT, 2) investigate mean-square statistics before t-standardized (Z STD) scores, and 3) examine high values before low or negative values. These three principles guide the following analysis. The mean-square statistic indicates whether or not the data fit the model in a useful way. For the purposes of this study the preceding criteria were used when evaluating item fit. Linacre (2011) suggested using a range of 0.5 and 1.5 for mean-square fit statistics, as fit statistics within this range indicate the item is productive for measurement.

*Question 4* asked respondents how frequently they used particular pieces of data in their decision making processes. One item shows mean-square fit statistics outside the suggested range: *Item 4a: I use standardized test scores to make decisions in my role in admissions* (OUTFIT MnSq=1.62 and ZSTD=7.7). This item will be discussed further in Chapter 5.

*Questions 6, 8, 10 and 12* are similar in their wording and showed similar results upon analysis. Only one item shows a mean-square fit statistic above 1.5. *Question 6* asked respondents the frequency of their use of data analysis to make
decisions about various programmatic and policy areas. Specifically, *Item 6h: I use data analysis to make decisions about financial aid distribution in my role in admissions* showed an OUTFIT mean-square fit statistic above 1.5 (OUTFIT MnSq=1.54). The only other question on the instrument to show item misfit was *Question 24*, which was only answered by those respondents who indicated they do not use DDDM. Again, only one item, *Item 24b: It is not part of my job responsibilities to use data to make decisions* had an OUTFIT above 1.5 (OUTFIT MnSq=2.11). These results are discussed further in Chapter 5.

**Variable Maps**

A person and item map was generated for each of the eight questions (See Appendix C). A person and item map displays both persons and items on the same interval scale. The Rasch model “has the distinct advantage of applying the same analytical logic, and therefore the same logic of interpretation, to persons as it does to items” (Bond and Fox, 2007, p. 60). Both are displayed on a logit scale, which not only allows one to discern the order of items and persons, but also how much more difficulty/ability one item/person has when compared to another item/person. In this study, the item difficulty indicates how difficult it was for a respondent to endorse that particular item. Those items toward the top of the scale are more difficult for respondents to endorse, while those at the bottom of the scale are easier for respondents to endorse.

The distribution for both persons and items along the scale can also be revealing. Ideally, both persons and items will be distributed in a bell-shaped curve across the scale. This distribution indicates a well-matched person/item sample. A distribution with a disproportionate number of persons toward the top would indicate
a relatively easy instrument for the sample. Conversely, a disproportionate number of persons toward the bottom of the map would show the instrument was relatively difficult for the sample.

A variable map for each of the eight questions was created. For Question 4, the mean of the professionals’ responses is the same as the mean of the items’ difficulty. This indicates the items were a good match of the ability of this group. However, for Questions 6 and 8, the mean of the professionals’ responses is higher than the mean of the items’ difficulty, which indicates that these items were easy for this group to endorse. Questions 10 and 12 found the opposite. For both, the mean of the professionals’ responses is lower than the mean of the items’ difficulty which indicates these items are more difficult for this group to endorse. When examining Questions 14, 21 and 24 the mean of the professionals’ responses was again higher than the mean of the items’ difficulty, which indicates those items in each question were easy for this group to endorse. Furthermore, when looking at the placement of the items along the scales for all questions except Question 14 (Confidence), all items are one logit or below. This finding supports the idea that most of the items were relatively easy for this sample.

There was one additional finding worth noting. In many of the variable maps (Questions 8, 10, 12, 24) there are two modes or even three modes in the data, which might be the result of items functioning differently for different groups. The next section discusses other analysis that demonstrates how items function for various groups within the population.
Differential Item Functioning (DIF)

The final analysis conducted for survey validation was pairwise differential item functioning (DIF). DIF allows items to be evaluated to determine if they are functioning in a similar way for various sub-groups within the population. DIF analyses were conducted for the eight questions. DIF Contrast is the difference in item difficulty (in this case endorseability) between the two groups (Linacre, 2011). According to Linacre (2011), DIF contrast should be at least 0.5 logits to be noticeable. Therefore, only DIF contrasts above 0.5 logits are reported and discussed in this study.

The analysis compared senior staff (defined as director, chief enrollment officer and chief admission officer) to junior staff (defined as associate director, assistant director, and admissions counselor). The DIF analysis required the creation of a new variable called “Assigned Title.” When respondents indicated their title, they had the ability to choose more than one answer. For the purposes of analysis, each respondent who identified more than one title was assigned a single title. In most cases, the respondent was listed as the more senior of the two (or more) titles. For instance, if someone indicated they were both an admissions counselor and an assistant director, the respondent was given the assigned title of assistant director.

Using assigned title, another variable was created which categorized respondents into senior or junior staff as stated above. Tables 4.2 and 4.3 display all items that indicate DIF. Question 14, regarding respondents’ level of confidence with various quantitative methods, showed no items with DIF contrasts above 0.5.
Table 4.2

*Items Senior Staff Found More Difficult to Endorse*

<table>
<thead>
<tr>
<th>Number</th>
<th>Question Content</th>
<th>DIF Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4c</td>
<td>I use high school profiles to make decisions in my role in admissions.</td>
<td>0.56</td>
</tr>
<tr>
<td>Item 4i</td>
<td>I use information categorized by students’ race/ethnicity to make decisions in my role in admissions.</td>
<td>0.53</td>
</tr>
<tr>
<td>Item 6d</td>
<td>I use data analysis to make decisions about programming in my role in admissions.</td>
<td>0.53</td>
</tr>
<tr>
<td>Item 6g</td>
<td>I use data analysis to make decisions about territory management in my role in admissions.</td>
<td>0.88</td>
</tr>
<tr>
<td>Item 8d</td>
<td>I use institutional research to make decisions about programming in my role in admissions.</td>
<td>0.67</td>
</tr>
<tr>
<td>Item 8g</td>
<td>I use institutional research to make decisions about territory management in my role in admissions.</td>
<td>0.64</td>
</tr>
<tr>
<td>Item 10g</td>
<td>I use third party research to make decisions about territory management in my role in admissions.</td>
<td>0.71</td>
</tr>
<tr>
<td>Item 10h</td>
<td>I use third party research to make decisions about financial aid distribution in my role in admissions.</td>
<td>0.65</td>
</tr>
<tr>
<td>Item 12g</td>
<td>I use outside research to make decisions about territory management in my role in admissions.</td>
<td>1.21</td>
</tr>
<tr>
<td>Item 21c</td>
<td>Deans or directors of admissions at my institutions have influenced my use of data in my role.</td>
<td>1.52</td>
</tr>
<tr>
<td>Item 24b</td>
<td>It is not part of my job responsibilities to use data to make decisions.</td>
<td>1.15</td>
</tr>
</tbody>
</table>
Table 4.3

*Items Senior Staff Found Less Difficult to Endorse*

<table>
<thead>
<tr>
<th>Item</th>
<th>Question Content</th>
<th>DIF Contrast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 4h</td>
<td>I use institutional budget and financial information to make decisions in my role in admissions.</td>
<td>-0.78</td>
</tr>
<tr>
<td>Item 8e</td>
<td>I use institutional research to make decisions about long-range strategic planning in my role in admissions.</td>
<td>-0.61</td>
</tr>
<tr>
<td>Item 10i</td>
<td>I use third party research to make decisions about awarding scholarships in my role in admissions.</td>
<td>-0.62</td>
</tr>
<tr>
<td>Item 21e</td>
<td>Federal mandates/reporting standards have influence my use of data in my role in admissions.</td>
<td>-0.51</td>
</tr>
<tr>
<td>Item 24i</td>
<td>The office of institutional research (IR) is not adequately staff for the institutions’ information and research needs.</td>
<td>-0.89</td>
</tr>
</tbody>
</table>

**Research Question 1**

Although the entire survey instrument was dedicated to determining the perceptions of undergraduate admission professionals regarding their use of DDDM, *Question 19* specifically asked respondents whether or not they consider themselves someone who uses DDDM in their role. Respondents were reminded DDDM was being defined as admission professionals systematically collecting and analyzing various types of quantitative data to support programmatic and policy decisions in their role in admissions at their institution. The majority of respondents (82.54%, n=652) answered
this question affirmatively and indicated they used DDDM in their role in admissions. Only 17.46% indicated they did not use DDDM in their role. Table 4.4 displays responses to this question categorized by the respondent’s assigned title. It is clear that the majority of admission professionals at all levels of responsibility who responded to this survey perceive themselves as using DDDM when making decisions related to their role in undergraduate admissions. A chi-square test was conducted to determine if there were differences across roles and use of DDDM. However, to avoid cell counts less than five, which then produces invalid chi-square results, the groups in Table 4.4 were collapsed until two categories existed—senior staff and junior staff. The category “senior staff” included director, chief admissions officer and chief enrollment officer. While the category “junior staff” included admissions counselor, assistant director and associate director. The chi-square analysis showed a significant difference (p=0.00) in the use of DDDM between senior staff and junior staff.
Table 4.4

Percentage of Admission Professionals Who Use DDDM, by title (n=648)

<table>
<thead>
<tr>
<th>Title</th>
<th>Does Not Use DDDM</th>
<th>Uses DDDM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions Counselor</td>
<td>3.70%</td>
<td>6.48%</td>
</tr>
<tr>
<td>Assistant Director</td>
<td>5.71%</td>
<td>12.35%</td>
</tr>
<tr>
<td>Associate Director</td>
<td>4.32%</td>
<td>17.90%</td>
</tr>
<tr>
<td>Chief Admissions Officer</td>
<td>0.31%</td>
<td>7.56%</td>
</tr>
<tr>
<td>Chief Enrollment Officer</td>
<td>0.15%</td>
<td>16.05%</td>
</tr>
<tr>
<td>Director</td>
<td>2.93%</td>
<td>19.75%</td>
</tr>
<tr>
<td>Other</td>
<td>0.46%</td>
<td>1.85%</td>
</tr>
</tbody>
</table>

The discussions of Research Questions 2, 3 and 4 will delve deeper into the characteristics of those individuals who perceive themselves as using DDDM, those who perceive themselves as not using DDDM and the ways in which professionals are using DDDM. Nonetheless, there are a few results that seem relevant to share in the discussion of Research Question 1. For each of the demographic variables, a chi-square test was conducted using Question 19 from the survey instrument using a p value of 0.05. In the instance a respondent indicated “Prefer not to answer”, this data was treated as missing data for the chi-square analysis. Several factors were hypothesized to influence the use of DDDM: size of the institution, selectivity of the institution, type of institution (public or private), highest degree held by an individual, age, gender and length of time an individual had been employed in the field of admissions.
There was not a statistical difference in admission professionals’ use of DDDM based upon the size of their institution \((p=.927)\) or the selectivity of their institution \((p=.616)\). Furthermore, there was not statistical difference in the use of DDDM between survey respondents who were employed by a public institution or a private institution \((p=.862)\). Neither length of time in employed in the field of admissions \((p=.061)\) nor age of the respondent \((p=.178)\) nor gender \((p=.417)\) were found to be statistically significant either. Employment status (full-time versus less than full-time) was not analyzed because only three respondents from the response frame indicated they were employed less than full-time. The only variable that did show a statistical difference between groups was the respondents’ current education endeavors. A chi-square analysis found a statistically significant relationship \((p=.032)\) between the use of DDDM and whether or not a respondent is currently pursuing further education. Only 13.47\% of DDDM users are currently enrolled in a degree program at any level or taking courses as a non-degree seeking student while 30\% of those who do not use DDDM indicated enrollment in a program or coursework. A post-hoc analysis of the statistically significant chi-square result indicated more respondents than expected indicated they did not use DDDM, but were currently pursuing additional education. This finding is discussed in further detail in Chapter 5.

**Research Question 2**

As was discussed in *Research Question 1*, for the purposes of analysis, respondents were categorized into senior staff (director, chief admissions officer and chief enrollment officer) and junior staff (admissions counselor, assistant director and
associate director). Of those who responded they perceived themselves to use DDDM in their role, 54.41% were senior staff and 45.59% were junior staff. More senior staff responded they were using DDDM (92.81%) in their role when compared to junior staff (72.78%). The chi-square analysis showed a significant difference \( (p=0.000) \) in the use of DDDM between senior staff and junior staff.

As was mentioned previously, only 13.47% of DDDM users were currently enrolled in a degree program at any level or taking courses as a non-degree seeking student. Of those indicating use of DDDM, 59.31% had a master’s degree and 8% had earned a doctoral degree. For purposes of analysis, groups were collapsed into three groups: advanced degree (including professional and doctoral degrees), master’s and bachelor’s degrees. The analysis found there was not a statistically significant difference \( (p=0.475) \) between the three groups created to analyze highest degree held in terms of their perceived use of DDDM. Most DDDM users were employed at selective (43.80%), private institutions (69.79%) with less than 5,000 undergraduate students enrolled (61.09%). When asked about factors that influenced their use of DDDM, over half of respondents indicated (‘Strongly Agree’ or ‘Agree’) college leadership, their board of trustees, deans and directors of admission, and reporting requirements and accreditation all influenced their use of DDDM. Of the six influences, 48.08% of respondents indicated ‘Strongly Agree’ when asked about the influence deans or directors of admission had on their use of DDDM and 43.30% strongly agreed that college leadership influenced their use of DDDM. Fewer (11.95% ‘Strongly Agree’ and 34.30% ‘Agree’) indicated that state and federal mandates and/or reporting influenced their use of DDDM. Qualitative data collected in the survey supported these findings. Many respondents indicated they used DDDM because their leadership (in the office, in
the department or across the institution) responded to DDDM. Several respondents also indicated that DDDM offered a way to allocate limited resources effectively and provide a concrete rationale for resource allocation. Moreover, respondents stated using data allows them to be more objective in the process in the decision making process.

An open-ended question regarding influences on DDDM was also included in the survey instrument. Many respondents indicated their educational background influenced their use of DDDM. Several also indicated that their personal philosophies, their own desire to improve their situation and make good decisions, drove their use of data in decision making. Past success in using DDDM and the current economic downturn were also noted as reasons respondents used DDDM. Overall, 97.7% of DDDM users believed anyone in their role should use data to make decisions.

Only 114 (17.48%) respondents indicated they did not classify themselves as using DDDM in their role in admissions. Of this group, 80.18% were junior staff while 19.82% indicated they were senior staff. Most respondents in this group were from a private (76.24%) institution with an undergraduate enrollment of less than 5,000 students (63.37%). Of those that did not use DDDM, 36.63% were from selective institutions and 34.65% were from highly selective institutions. In terms of levels of education, 49.50% of professionals not using DDDM indicated a bachelor’s degree was the highest degree earned and 45.54% indicated a master’s degree was the highest degree they had attained.

As was previously discussed, the other variable found to be statistically significant when examining DDDM was current education endeavors ($p=.032$). Currently, 30% of those not using DDDM indicated they were pursuing an additional degree or taking courses as a non-degree seeking student. The majority of respondents were pursuing a master’s degree. A post-hoc analysis of this result
indicated more respondents than expected indicated they did not use DDDM, but were currently pursuing additional education.

The most commonly cited reasons for not using DDDM were that it was not part of the respondent’s job responsibilities, lack of access to resources to aid respondents in understanding and using data and information, data not being available to respondents in user-friendly formats and data not being as useful as other decision making resources at respondents’ disposal. In fact, 44 respondents (32.35%, n=102) believed (indicated ‘Strongly Agree’ or ‘Agree’) the data available to them were not as useful as other decision making resources as their disposal. While this is a small number in comparison to the total number of respondents who completed the survey, it is still notable. There is a group of individuals who perceive data is not as useful to them in their decision making processes.

Because of the exploratory nature of this study, an open-ended question was also included to collect more information as to why respondents did not use DDDM in their roles. Twenty-three individuals responded to the open-ended question. Six respondents indicated lack of staff (admissions, technology or staff in other departments) as a barrier to using DDDM, and 5 comments related to the lack of a DDDM culture within their office or institution.

Within the qualitative comments that were provided by respondents, four of the twenty-three statements indicated respondents did use data in their decision making. These same four respondents indicated earlier in the survey they did not consider themselves to use DDDM. These contradictory responses will be further explored in the next chapter.
Research Question 3

*Research Question 1* establishes that the majority of undergraduate admission professionals who responded to this survey perceive themselves as using DDDM. However, it is important to examine the ways in which professionals are using data and DDDM. Several questions on this survey instrument provide insight into these perceptions. For instance, in *Question 4* on the survey instrument, respondents were asked to indicate how frequently they used various types of data in programmatic or policy decisions in their role in admissions. In all instances on the survey, respondents were asked about how they make programmatic and/or policy decisions in their role. Respondents were never asked to disclose how they made individual student admissions decisions, as this is often considered proprietary information. Almost all respondents reported they used standardized test scores (95.81%) and student grade point averages (89.1%) most frequently (indicating a response of ‘Almost always’ or ‘Often’). More than half of respondents reported using high school profiles and institutional budget and financial information frequently. Far fewer admission professionals reported using retention rates, graduation rates, financial aid information, information categorized by students’ race or ethnicity, gender or income level and percentage of students completing developmental education courses at their institutions frequently to make programmatic and policy decisions in their roles. Table 4.5 displays the full results.
Table 4.5

*Frequency of the Use of Various Types of Data by Admission Professionals*

<table>
<thead>
<tr>
<th>Type</th>
<th>n</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardized test scores</td>
<td>883</td>
<td>77.80%</td>
<td>18.01%</td>
<td>1.81%</td>
<td>1.25%</td>
</tr>
<tr>
<td>Student Grade Point Averages</td>
<td>883</td>
<td>62.97%</td>
<td>26.16%</td>
<td>5.66%</td>
<td>2.83%</td>
</tr>
<tr>
<td>High School Profiles</td>
<td>881</td>
<td>29.97%</td>
<td>37.46%</td>
<td>20.54%</td>
<td>7.72%</td>
</tr>
<tr>
<td>Retention Rates</td>
<td>877</td>
<td>10.49%</td>
<td>33.18%</td>
<td>28.73%</td>
<td>15.39%</td>
</tr>
<tr>
<td>Graduation Rates</td>
<td>875</td>
<td>10.97%</td>
<td>30.17%</td>
<td>30.06%</td>
<td>17.26%</td>
</tr>
<tr>
<td>Percentage students successfully completing developmental education courses</td>
<td>875</td>
<td>3.20%</td>
<td>11.89%</td>
<td>22.63%</td>
<td>23.77%</td>
</tr>
<tr>
<td>Financial Aid data</td>
<td>880</td>
<td>10.57%</td>
<td>26.70%</td>
<td>17.73%</td>
<td>26.82%</td>
</tr>
<tr>
<td>Institutional Budget and Financial Information</td>
<td>876</td>
<td>21.58%</td>
<td>31.28%</td>
<td>17.12%</td>
<td>17.81%</td>
</tr>
<tr>
<td>Information categorized by students' race or ethnicity</td>
<td>878</td>
<td>7.40%</td>
<td>28.59%</td>
<td>25.85%</td>
<td>22.10%</td>
</tr>
<tr>
<td>Information categorized by students' gender</td>
<td>880</td>
<td>5.00%</td>
<td>17.27%</td>
<td>27.16%</td>
<td>31.59%</td>
</tr>
<tr>
<td>Information categorized by students' income levels</td>
<td>879</td>
<td>3.07%</td>
<td>17.75%</td>
<td>22.98%</td>
<td>33.90%</td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.

Respondents were asked in a forced-choice question *(Question 15)* to rank their top three data/resources in terms of frequency of use and importance to them in terms of their decision making. Student grade point averages and standardized test scores were
cited as the most frequently used types of data. The results of Question 15 are displayed in Table 4.6. and 4.7

Table 4.6

*Five Most Frequently Cited Types of Data Used by Admission Professionals*

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>Choice 1</th>
<th></th>
<th>Choice 2</th>
<th></th>
<th>Choice 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percentage</td>
<td>n</td>
<td>Percentage</td>
<td>n</td>
<td>Percentage</td>
</tr>
<tr>
<td>Student grade point averages</td>
<td>246</td>
<td>39.94%</td>
<td>162</td>
<td>26.73%</td>
<td>26</td>
<td>4.42%</td>
</tr>
<tr>
<td>Standardized test scores</td>
<td>143</td>
<td>23.21%</td>
<td>177</td>
<td>29.21%</td>
<td>67</td>
<td>11.39%</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>88</td>
<td>14.29%</td>
<td>58</td>
<td>9.57%</td>
<td>68</td>
<td>11.56%</td>
</tr>
<tr>
<td>Internal research conducted by my institution</td>
<td>55</td>
<td>8.93%</td>
<td>53</td>
<td>8.75%</td>
<td>56</td>
<td>9.52%</td>
</tr>
<tr>
<td>High school profiles</td>
<td>20</td>
<td>3.25%</td>
<td>51</td>
<td>8.42%</td>
<td>102</td>
<td>17.35%</td>
</tr>
</tbody>
</table>
Table 4.7

*Five Most Important Types of Data Used by Admission Professionals*

<table>
<thead>
<tr>
<th>Type of Data</th>
<th>Choice 1</th>
<th></th>
<th>Choice 2</th>
<th></th>
<th>Choice 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percentage</td>
<td>n</td>
<td>Percentage</td>
<td>n</td>
<td>Percentage</td>
</tr>
<tr>
<td>Student grade point averages</td>
<td>230</td>
<td>39.18%</td>
<td>99</td>
<td>17.25%</td>
<td>39</td>
<td>7.00%</td>
</tr>
<tr>
<td>Data analysis</td>
<td>96</td>
<td>16.35%</td>
<td>53</td>
<td>9.23%</td>
<td>59</td>
<td>10.59%</td>
</tr>
<tr>
<td>Standardized test scores</td>
<td>72</td>
<td>12.27%</td>
<td>153</td>
<td>26.66%</td>
<td>78</td>
<td>14.00%</td>
</tr>
<tr>
<td>Internal research conducted by my institution</td>
<td>60</td>
<td>10.22%</td>
<td>54</td>
<td>9.41%</td>
<td>66</td>
<td>11.85%</td>
</tr>
<tr>
<td>Other</td>
<td>25</td>
<td>4.26%</td>
<td>12</td>
<td>2.09%</td>
<td>32</td>
<td>5.75%</td>
</tr>
</tbody>
</table>
Additionally, data analysis was cited as frequently used in making decisions. In terms of importance in decision making, student grade point averages, data analysis and standardized test scores were again listed most frequently as the most important resource in decision making. Internal research produced by the respondents’ institutions and high school profiles were listed as both frequently used and important resources by admission professionals in this study.

The next set of questions included in the survey instrument asked respondents to indicate the frequency with which they used data analysis, institutional research, outside research and third party research to make decisions regarding eleven programmatic and policy areas. A definition for each term (data analysis, institutional research, etc.) was provided in the survey for respondents to reference. The eleven areas included on the survey instrument were admissions policies, predictors of academic success, admissions procedures/operations, programming, long-range strategic planning, marketing, territory management, financial aid distribution, awarding of scholarships, general areas for improvement and budgeting.
Table 4.8

*Frequency of the Use of Data Analysis in Decision Making by Admissions Professionals*

<table>
<thead>
<tr>
<th>Program or Policy Area</th>
<th>n</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions policies</td>
<td>778</td>
<td>42.16%</td>
<td>38.56%</td>
<td>9.90%</td>
<td>3.47%</td>
<td>5.91%</td>
</tr>
<tr>
<td>Predictors of academic success</td>
<td>776</td>
<td>36.86%</td>
<td>37.76%</td>
<td>14.05%</td>
<td>5.28%</td>
<td>6.06%</td>
</tr>
<tr>
<td>Admissions procedures/operations</td>
<td>772</td>
<td>39.90%</td>
<td>40.67%</td>
<td>10.10%</td>
<td>3.76%</td>
<td>5.57%</td>
</tr>
<tr>
<td>Programming</td>
<td>776</td>
<td>41.37%</td>
<td>38.27%</td>
<td>9.66%</td>
<td>3.48%</td>
<td>7.22%</td>
</tr>
<tr>
<td>Long-range strategic planning</td>
<td>772</td>
<td>47.93%</td>
<td>33.16%</td>
<td>7.77%</td>
<td>2.98%</td>
<td>8.16%</td>
</tr>
<tr>
<td>Marketing</td>
<td>773</td>
<td>41.79%</td>
<td>34.02%</td>
<td>12.42%</td>
<td>3.23%</td>
<td>8.54%</td>
</tr>
<tr>
<td>Territory Management</td>
<td>772</td>
<td>54.15%</td>
<td>33.42%</td>
<td>5.70%</td>
<td>1.55%</td>
<td>5.18%</td>
</tr>
<tr>
<td>Financial Aid Distribution</td>
<td>771</td>
<td>25.94%</td>
<td>16.08%</td>
<td>12.84%</td>
<td>9.86%</td>
<td>35.28%</td>
</tr>
<tr>
<td>Awarding of scholarships</td>
<td>770</td>
<td>36.23%</td>
<td>24.94%</td>
<td>10.39%</td>
<td>5.45%</td>
<td>22.99%</td>
</tr>
<tr>
<td>General areas for improvement</td>
<td>770</td>
<td>38.70%</td>
<td>43.90%</td>
<td>10.78%</td>
<td>3.12%</td>
<td>3.51%</td>
</tr>
<tr>
<td>Budgeting</td>
<td>774</td>
<td>34.24%</td>
<td>29.97%</td>
<td>13.82%</td>
<td>6.46%</td>
<td>15.50%</td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.
The majority of respondents indicated they used (“Almost always” or “Often”) data analysis for all eleven areas presented in Question 6. The full results of Question 6 are displayed in Table 4.8. A noticeably smaller group indicated they utilized data analysis when making decisions about financial aid distribution (42.02% indicated “Almost always” or “Often”) and the awarding of scholarships (61.17% indicated “Almost always” or “Often”).
### Table 4.9

*Frequency of the Use of Institutional Research in Decision Making by Admissions Professionals*

<table>
<thead>
<tr>
<th>Program or Policy Area</th>
<th>n</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions policies</td>
<td>717</td>
<td>27.89%</td>
<td>37.38%</td>
<td>16.18%</td>
<td>7.81%</td>
<td>10.74%</td>
</tr>
<tr>
<td>Predictors of academic success</td>
<td>716</td>
<td>25.98%</td>
<td>37.57%</td>
<td>18.44%</td>
<td>7.12%</td>
<td>10.89%</td>
</tr>
<tr>
<td>Admissions procedures/operations</td>
<td>714</td>
<td>22.55%</td>
<td>37.11%</td>
<td>20.03%</td>
<td>10.22%</td>
<td>10.08%</td>
</tr>
<tr>
<td>Programming</td>
<td>716</td>
<td>19.83%</td>
<td>29.33%</td>
<td>24.58%</td>
<td>13.41%</td>
<td>12.85%</td>
</tr>
<tr>
<td>Long-range strategic planning</td>
<td>717</td>
<td>31.94%</td>
<td>34.17%</td>
<td>15.34%</td>
<td>7.95%</td>
<td>10.60%</td>
</tr>
<tr>
<td>Marketing</td>
<td>715</td>
<td>23.50%</td>
<td>31.75%</td>
<td>20.56%</td>
<td>11.05%</td>
<td>13.15%</td>
</tr>
<tr>
<td>Territory Management</td>
<td>717</td>
<td>26.22%</td>
<td>30.54%</td>
<td>20.08%</td>
<td>13.53%</td>
<td>9.62%</td>
</tr>
<tr>
<td>Financial Aid Distribution</td>
<td>712</td>
<td>19.24%</td>
<td>17.98%</td>
<td>13.90%</td>
<td>14.75%</td>
<td>34.13%</td>
</tr>
<tr>
<td>Awarding of scholarships</td>
<td>712</td>
<td>19.66%</td>
<td>24.30%</td>
<td>13.76%</td>
<td>16.29%</td>
<td>25.98%</td>
</tr>
<tr>
<td>General areas for improvement</td>
<td>713</td>
<td>21.60%</td>
<td>36.89%</td>
<td>20.62%</td>
<td>11.22%</td>
<td>9.68%</td>
</tr>
<tr>
<td>Budgeting</td>
<td>714</td>
<td>18.63%</td>
<td>25.07%</td>
<td>21.01%</td>
<td>15.41%</td>
<td>19.89%</td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.
Again, a majority of respondents indicated they used institutional research frequently (either “Almost always” or “Often”) in their decision making regarding the eleven policy and program areas presented in Question 8. For the purposes of this survey, institutional research was defined as research produced by the respondent’s institution for internal use.
Table 4.10

*Frequency of the Use of Third Party Research in Decision Making by Admissions Professionals*

<table>
<thead>
<tr>
<th>Program or Policy Area</th>
<th>n</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Never</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions policies</td>
<td>685</td>
<td>4.67%</td>
<td>26.57%</td>
<td>29.34%</td>
<td>24.53%</td>
<td>14.89%</td>
<td></td>
</tr>
<tr>
<td>Predictors of academic success</td>
<td>684</td>
<td>4.39%</td>
<td>23.25%</td>
<td>28.36%</td>
<td>26.90%</td>
<td>17.11%</td>
<td></td>
</tr>
<tr>
<td>Admissions procedures/operations</td>
<td>682</td>
<td>4.11%</td>
<td>26.10%</td>
<td>29.91%</td>
<td>24.78%</td>
<td>15.10%</td>
<td></td>
</tr>
<tr>
<td>Programming</td>
<td>685</td>
<td>3.50%</td>
<td>21.17%</td>
<td>32.26%</td>
<td>24.82%</td>
<td>18.25%</td>
<td></td>
</tr>
<tr>
<td>Long-range strategic planning</td>
<td>684</td>
<td>9.36%</td>
<td>30.56%</td>
<td>26.02%</td>
<td>17.98%</td>
<td>16.08%</td>
<td></td>
</tr>
<tr>
<td>Marketing</td>
<td>682</td>
<td>10.26%</td>
<td>36.51%</td>
<td>21.99%</td>
<td>15.10%</td>
<td>16.13%</td>
<td></td>
</tr>
<tr>
<td>Territory Management</td>
<td>680</td>
<td>6.18%</td>
<td>21.47%</td>
<td>30.00%</td>
<td>26.32%</td>
<td>16.03%</td>
<td></td>
</tr>
<tr>
<td>Financial Aid Distribution</td>
<td>684</td>
<td>10.96%</td>
<td>19.01%</td>
<td>15.94%</td>
<td>18.71%</td>
<td>35.38%</td>
<td></td>
</tr>
<tr>
<td>Awarding of scholarships</td>
<td>684</td>
<td>10.53%</td>
<td>19.01%</td>
<td>18.86%</td>
<td>22.51%</td>
<td>29.09%</td>
<td></td>
</tr>
<tr>
<td>General areas for improvement</td>
<td>682</td>
<td>63.00%</td>
<td>28.45%</td>
<td>31.09%</td>
<td>19.65%</td>
<td>14.52%</td>
<td></td>
</tr>
<tr>
<td>Budgeting</td>
<td>682</td>
<td>2.93%</td>
<td>13.64%</td>
<td>26.54%</td>
<td>30.21%</td>
<td>26.69%</td>
<td></td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.
Question 10 asked respondents’ about their use of third party research, which was defined as research produced by an outside firm, consultant or organization specifically for the respondents’ institution. Over 90% of respondents stated they utilized third party research to make decisions regarding general areas for improvement. 10% of respondents indicated they almost always use third party research to make decisions regarding marketing, financial aid distribution and the awarding of scholarships. Respondents said they frequently (‘Almost always’ or ‘Often’) used third party research for marketing and long-range strategic planning. The results of Question 10 are outlined in Table 4.10.
Table 4.11

*Frequency of the Use of Outside Research in Decision Making by Admission Professionals*

<table>
<thead>
<tr>
<th>Program or Policy Area</th>
<th>n</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admissions policies</td>
<td>672</td>
<td>5.06%</td>
<td>31.40%</td>
<td>32.89%</td>
<td>19.94%</td>
<td>10.71%</td>
</tr>
<tr>
<td>Predictors of academic success</td>
<td>670</td>
<td>4.03%</td>
<td>27.46%</td>
<td>31.49%</td>
<td>24.18%</td>
<td>12.84%</td>
</tr>
<tr>
<td>Admissions procedures/operations</td>
<td>671</td>
<td>4.17%</td>
<td>28.32%</td>
<td>36.07%</td>
<td>20.57%</td>
<td>10.88%</td>
</tr>
<tr>
<td>Programming</td>
<td>670</td>
<td>3.58%</td>
<td>27.31%</td>
<td>35.37%</td>
<td>21.94%</td>
<td>11.79%</td>
</tr>
<tr>
<td>Long-range strategic planning</td>
<td>671</td>
<td>7.00%</td>
<td>33.53%</td>
<td>30.10%</td>
<td>17.73%</td>
<td>11.62%</td>
</tr>
<tr>
<td>Marketing</td>
<td>672</td>
<td>8.04%</td>
<td>36.31%</td>
<td>27.98%</td>
<td>14.43%</td>
<td>13.24%</td>
</tr>
<tr>
<td>Territory Management</td>
<td>673</td>
<td>4.01%</td>
<td>19.02%</td>
<td>37.00%</td>
<td>29.57%</td>
<td>10.40%</td>
</tr>
<tr>
<td>Financial Aid Distribution</td>
<td>671</td>
<td>3.73%</td>
<td>15.95%</td>
<td>23.55%</td>
<td>25.34%</td>
<td>31.45%</td>
</tr>
<tr>
<td>Awarding of scholarships</td>
<td>669</td>
<td>3.14%</td>
<td>16.29%</td>
<td>25.11%</td>
<td>29.00%</td>
<td>26.46%</td>
</tr>
<tr>
<td>General areas for improvement</td>
<td>671</td>
<td>7.90%</td>
<td>32.49%</td>
<td>34.13%</td>
<td>16.54%</td>
<td>8.94%</td>
</tr>
<tr>
<td>Budgeting</td>
<td>667</td>
<td>2.25%</td>
<td>14.84%</td>
<td>29.39%</td>
<td>32.38%</td>
<td>21.14%</td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.
Question 12 asked respondents’ about their use of outside research, which was defined as books, research studies, articles from journals, etc. Table 4.11 displays the complete results from Question 12. Respondents indicated they used outside research most frequently (‘Almost always’ or ‘Often’) for marketing (44.35%, n=676), long-range strategic planning (40.53%) and general areas for improvement (40.39%). Overall, however, respondents indicated they used outside research less frequently than other types of information in their decision making processes. More than half of respondents indicated they seldom or almost never used third party research to make decisions regarding territory management, programming, budgeting, admissions procedures/operations, predictors of academic success and awarding of scholarships.

Research Question 4

Overall, undergraduate admission professionals indicated they have confidence in their ability to use data in decision making. Respondents were asked to think about their own skill sets and then rate their level of agreement with statements such as “I am confident in my ability to interpret data analysis.” Respondents were asked to respond to a total of seven statements each statement addressing a different skill related to DDDM. Table 4.12 displays a summary of the responses.
Table 4.12

*Level of Confidence Admission Professionals Indicate in Using Various Data in Decision Making*

<table>
<thead>
<tr>
<th>Skill</th>
<th>n</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpret data analysis</td>
<td>675</td>
<td>37.93%</td>
<td>57.93%</td>
<td>3.11%</td>
<td>0.59%</td>
<td>0.44%</td>
</tr>
<tr>
<td>Conduct data analysis</td>
<td>675</td>
<td>20.74%</td>
<td>53.93%</td>
<td>22.22%</td>
<td>1.93%</td>
<td>1.19%</td>
</tr>
<tr>
<td>Interpret institutional research</td>
<td>673</td>
<td>34.92%</td>
<td>58.40%</td>
<td>2.46%</td>
<td>0.30%</td>
<td>1.93%</td>
</tr>
<tr>
<td>Interpret third party research</td>
<td>669</td>
<td>63.38%</td>
<td>27.35%</td>
<td>6.43%</td>
<td>0.15%</td>
<td>2.69%</td>
</tr>
<tr>
<td>Interpret outside research</td>
<td>675</td>
<td>27.41%</td>
<td>63.85%</td>
<td>6.37%</td>
<td>0.15%</td>
<td>2.22%</td>
</tr>
<tr>
<td>Use to inform decisions</td>
<td>674</td>
<td>42.88%</td>
<td>52.67%</td>
<td>2.97%</td>
<td>0.30%</td>
<td>1.19%</td>
</tr>
<tr>
<td>Use to support departmental decision making</td>
<td>673</td>
<td>41.16%</td>
<td>51.71%</td>
<td>4.31%</td>
<td>0.45%</td>
<td>2.38%</td>
</tr>
</tbody>
</table>

Note: Due to missing data, all rows do not total 100%.

95.55% of respondents indicated they had confidence in their ability (by selecting either “Strongly Agree” or “Agree”) to use data to inform the decisions they make in their role in admissions. 92.87% of respondents indicated they had confidence in their ability to use data to support departmental decision making. Respondents also felt confident about their ability to interpret data analysis, institutional, third party and
outside research. However, respondents were less confident about their ability to conduct data analysis, with only 74.67% of respondents indicating they had confidence in their ability to conduct data analysis. While this percentage indicates a high level of confidence among admission professionals, it is markedly different from the other responses, and therefore, worth noting.

It is interesting to examine the results of Question 14 along with those answers from Question 18, which asks respondents about the instruction they have received in various areas of qualitative and quantitative research methodologies. The majority of respondents indicated they had received instruction in introductory statistics (74.2%, n=590) and evaluation (72.5%, n=590). Most respondents (68.6%) also indicated they had received instruction in assessment and 55.6% in qualitative research methods. Furthermore, 44.2% stated they had received instruction in survey design and 39.3% in intermediate statistics. At first glance this seems to be a high percentage of individuals with relatively extensive methodological training, particularly since they serve in roles that do not typically require that skill set. However, 57% of respondents stated they completed a master’s degree and 7.2% had completed a doctoral degree. In addition, 141 respondents (24.42%, n=582) are currently pursuing a master’s or doctoral degree, the majority of whom are doing so in an education program. The level of education among respondents would seem support their confidence with interpreting various types of data and information.

Summary

This chapter presented the results of the survey instrument specifically designed for this study to ascertain the frequencies of use, the levels of knowledge and confidence levels among admission professionals at four-year colleges and universities
in regards to their use of data in decision making. Before data from the instrument was reported, Rasch modeling, a type of Item Response Theory, was used to analyze response data in order to examine the validity and reliability of the instrument and resulting data. Eight of the questions from the instrument were constructed in a way that allowed Rasch analysis to be conducted. Several types of analyses were conducted and included the calculation of person and item reliability estimates, item fit statistics, variable maps, category and dimensionality analysis. In summary, the Rasch analysis found the instrument to be generally reliable and valid.

Once the effectiveness of the survey instrument was determined, descriptive statistics and chi-square analyses were produced to answer the four research questions guiding this study. The closing chapter will present a discussion of the results of this study and include conclusions and recommendations for future research in the field.
Chapter Five

Discussion and Conclusion

The purpose of this study was to explore the knowledge and habits of undergraduate admission professionals at four-year colleges and universities regarding their use of data in decision making. A survey instrument was disseminated, and the data collected from the instrument provided empirical information, which serves as the basis for a discussion about how admission professionals at four-year institutions perceive their use data in their decision making and their level of confidence in doing so. The instrument disseminated was designed specifically for this study and included questions inquiring about the respondents’ use of data in decision making, resources available to the respondents to aid in using data and the respondents’ confidence level with using data. The survey instrument also included questions to collect demographic and background information about the individuals and the institutions at which they are employed. However, before the research questions guiding this study were addressed, Rasch analysis was utilized to evaluate the validity and reliability of the survey instrument.

While there is extensive discussion about data-driven decision making (DDDM) in education literature, few empirical studies have been conducted to determine where educators perceive themselves in terms of their use of data, their knowledge of using data and their confidence in using data in decision making. There is far less research regarding higher education and DDDM than in K through 12 (Jenkins & Kerrigan, 2008; Jenkins & Kerrigan, 2009). This study adds to a sparse literature pool in DDDM. It also adds to the literature in the field of measurement. The survey instrument created for this study has been validated as a measurement tool and can be used as the foundation for future research. The results of this study will also inform the practice and
training in the field of college admission. This chapter summarizes the study, the survey validation analysis and presents the findings to the four research questions guiding the study. Additionally, recommendations for future research in the area of higher education professionals and DDDM are included in this chapter.

Survey Validation

As has been discussed previously, few empirical studies regarding how educators use DDDM exist. Of those that have been published, none address the validity or reliability of the instrument utilized in the study. Therefore, this study included significant effort to insure the instrument created and disseminated was valid and reliable. Using a measurement framework, multiple statistics were produced to evaluate the validity of the survey instrument: person and item reliability estimates, variable maps, INFIT and OUTFIT measures for each item. Rating scale, dimensionality diagnostics and differential item functioning statistics were conducted as well. The results of these tests supported the finding that overall, the survey instrument created for this study was generally valid and reliable.

As cited in the previous chapter, the person reliability indices for each question are lower than the item reliability indices. This is most likely due to the homogenous group to which this survey was disseminated. It is also likely a reflection of social desirability bias. After the release of the 2006 United States Department of Education report, A Test of Leadership: Charting the Future for U.S. Higher Education which included an explicit and large-scale action call to action from higher education institutions, DDDM has moved to the forefront of higher education. In addition, because of the constantly increasing costs of higher education, government and the public are calling for increased transparency (Huisman & Currie, 2004;
Jenkins & Kerrigan, 2008; Jenkins & Kerrigan, 2009; Leveille, 2006; Shavelson, 2010; U.S. Department of Education, 2006). These events have made it clear to admission professionals and others in higher education that using data in decision making is considered a best practice. Professionals want to be viewed favorably by others and conforming to best practices. Therefore, it is likely they might over-estimate their use of data in order to be viewed as such, inflating results (Nardi, 2006). Response bias like this is common when using self-reported data, such as that collected through survey instruments.

The variable maps generated for the survey data displayed multiple modes. This most likely is representative of two different groups of respondents within the sample—senior and junior staff. One mode on the map reflects the answers of more senior staff (directors, chief enrollment officers and chief admissions officers) while the other mode reflects more junior staff (admissions counselors, assistant directors and associate directors). This hypothesis is supported by the fact that most items functioned differently for senior and junior staff (DIF Contrasts) and the chi-square showed a statistically significant difference between the two groups in terms of their use of DDDM.

All but one question showed well-functioning categories. In Question 14, one category was found to have a high OUTFIT mean-square. This indicated the category (“Strongly Disagree”) was used in a way not predicted by the model. The frequency data indicated the category was only used 23 times over the course of 6 items and 623 respondents. Again, this could be a reflection of social desirability. Furthermore, because of the exploratory nature of the study, this finding was noted but no action was taken.
Fit statistics are a unique and useful tool in Rasch analysis. Overall, the INFIT and OUTFIT statistics tell us that the data fits the model in a useful way and contribute to productive measurement of the construct. Those items with an OUTFIT mean square of below 0.5 are not discussed individually in this study per the principles suggested by Linacre (2011) as these statistics indicate less variance than the model would predict. This finding was expected due to the homogeneous nature of the population being sampled. In addition, as has been previously discussed, there is a level of response bias in this study.

Using the criteria outlined in Chapter 4, only two items proved to be misfitting for each of the questions analyzed. Item 4a: I use standardized test scores to make decisions in my role in admissions had OUTFIT mean-square fit statistic outside the acceptable range. Questions 6, 8, 10 and 12 were constructed in the same manner and asked respondents about their use of data analysis, institutional research, third party research and outside research when making decisions about eleven programmatic and policy areas. Only Item 6h among them showed item misfit (OUTFIT MnSq=1.54). These two statistics indicate unexpected responses and irregularity in the response pattern from respondents. For both items, the high mean-square fit statistic is likely due to the fact that almost all respondents indicated they use these data “Almost always” or “Often.” This is expected for Item 4a as most institutions use standardized tests to make decisions in their offices. In regards to Item 6h, it is also likely that offices use data analysis to make decisions regarding financial aid distribution. Regardless, Linacre (2011) indicates items with mean-square fit statistics between 1.5 and 2.0, while unproductive for the construction of measurement are not degrading to the overall instrument. Therefore, these items remain in the analysis.

Question 24 was answered by those respondents who indicate they do not use
Only one item Item 24b: *It is not part of my job responsibilities to use data to make decisions* has an OUTFIT MnSq=2.11 and an OUTFIT ZSTD of 5.0. This high statistic indicates this item distorts or degrades the measurement system. It may not be measuring the construct of interest. However, the Rasch model forces its estimates to be additive (Linacre, 2011). Therefore, this item is still included in the analysis. However, before fielding this instrument again, this item should be re-evaluated.

The final Rasch analysis performed on this data set was Differential Item Functioning (DIF). DIF identifies items that function differently for various sub-groups of the population. As was mentioned previously, several items indicated the presence of DIF. *Item 4c, I use high school profiles to make decisions in my role in admissions* was more difficult for senior staff to endorse. This finding is most likely due to the fact that senior staff are more removed from individual file review (at which point this information would be utilized) and are possibly more familiar with high schools that regularly send applicants to their schools. *Item 4i, I use information categorized by students’ race/ethnicity to make decisions in my role in admissions* was also more difficult for senior staff to endorse. This difference could be because senior staff are more attune to the sensitive nature of categorizing students by race and, therefore, find it socially more acceptable to say they do not engage in this practice. Conversely, *Item 4h I use institutional budget and financial information to make decisions in my role in admissions* was easier for senior staff to endorse. Budget decisions are most likely made at the senior level; hence, this item was easier for senior staff to endorse.

*Question 6, Item 6d, I use data analysis to make decisions about programming in my role in admissions* and *Item 6g, I use data analysis to make decisions about territory management in my role in admissions* were both more difficult for senior staff to endorse. These are typically duties that could fall to more junior level staff. For *Question*
8, Item 8d, I use institutional research to make decisions about programming in my role in admissions, and Item 8g, I use institutional research to make decisions about territory management in my role in admissions were more difficult for senior staff to endorse. Again, these are typically duties that fall to junior level staff. These are also two areas where institutional research is not relevant but, other types of internally produced data would be. Item 8e, I use institutional research to make decisions about long-range strategic planning in my role in admissions was easier for senior staff to endorse. Again, this is probably most closely tied to job duties. In many organizations, “big picture” issues, such as long-range planning and budget decisions, would be the responsibility of senior staff. Therefore, it is likely easier for senior staff to endorse this statement since it is more relevant to them.

Item 10g, I use third party research to make decisions about territory management in my role in admissions and Item 10h, I use third party research to make decisions about financial aid distribution in my role in admissions were more difficult for senior staff to endorse. Senior staff may not be responsible for territory management and therefore, found this item more difficult to endorse. Whereas Item 10i, I use third party research to make decisions about awarding scholarships in my role in admissions was easier for senior staff to endorse. For Question 12, Item 12g I use outside research to make decisions about territory management in my role in admissions was more difficult for senior staff to endorse. It is interesting that for Question 14, regarding respondents’ level of confidence with various quantitative methods, no items showed DIF contrasts above 0.5.

For Question 21, Item 21c, Deans or directors of admissions at my institutions have influenced my use of data in my role (DIF Contrast= 1.52) was more difficult for senior staff to endorse. Since senior staff are deans and directors, it is more difficult for
them to endorse this item. However, a high percentage of respondents did endorse this item. Respondents could be interpreting this statement as pertaining to their entire career rather than the present (i.e. “A dean or director influenced me at some point in my career” versus “A dean or director is currently an influence in using DDDM.”) 

*Item 21e, Federal mandates/reporting standards have influence my use of data in my role* (DIF Contrast=-0.51) was more difficult for senior staff to endorse. This could be in light of the fact that there is no overarching accountability structure for higher education institution and therefore, federal reporting might be very limited.

For Question 24, *Item 24b (DIF Contrast=1.15), It is not part of my job responsibilities to use data to make decisions* was more difficult for senior staff to endorse. Within the qualitative data, respondents indicated that DDDM was used because institutional leadership responded to data. *Item 24i, The office of institutional research (IR) is not adequately staffed for the institutions’ information and research needs* (DIF Contrast= -0.89) was less difficult for senior staff to endorse. Senior staff most likely have more direct interaction with Offices of Institutional Research and would be more capable of making such judgments when compared to junior staff.

In conclusion, this study ensured the validity and reliability of the instrument before proceeding to the analysis of the data produced by this instrument. Using a measurement model, multiple analyses were conducted and all indicated that this survey instrument was valid, reliable and measured the construct of interest. Not only does this inform this study, the survey instrument can also serve as a strong foundation for similar studies.
Research Questions and Selected Findings

Research Question 1: What are the perceptions of undergraduate admission professionals at four-year postsecondary institutions regarding their use of DDDM?

The results of the survey instrument demonstrated the majority (82.52%) of all undergraduate admission professionals, regardless of their title (or role in their office), perceive themselves as using data-driven decision making in their role in admissions. The Spellings Report (2006) called for the higher education community to use data in their decision making. It seems as though this practice has been adopted by admission professionals. However, as was discussed earlier in the chapter, response bias, particularly social desirability bias, can also explain the high rate of positive of responses.

In order to further explore the data, a series of chi-square tests were used to examine several variables to determine if there was a statistically significant relationship between the demographic variables and Question 19, Based upon the definition provided above, would you classify yourself as using data-driven decision making in your role in admissions. Only two variables did show a statistically significant relationship: role in office (junior or senior staff) and status of current education endeavors. These findings will be discussed later in this chapter.

Several variables were investigated with no statistically significant results. On an individual level, none of the following were found to have a statistically significant relationship with the use of DDDM, highest degree attained, length of time in the field of admissions, age, and gender. On an institutional level, neither type of institution (public or private), nor size or selectivity of institution were found to be statistically significant.
Research Question 2: What are the characteristics of those individual undergraduate admission professionals who are using DDDM and those who do not use DDDM?

Of all of the demographic information collected in this study, only two variables showed a statistically significant relationship when analyzed with Question 19. The first variable of interest related to the roles individuals played in their office. Initially, a chi-square test of this variable produced invalid results because of low cell counts.

Therefore, for the purposes of analysis, the original categories were collapsed into two categories: senior staff (director, chief admissions officer and chief enrollment officer) and junior staff (admissions counselor, assistant director and associate director). A chi-square analysis showed a statistically significant difference (p=.000) in using DDDM between those classified as senior staff and those classified as junior staff. This finding was expected and concurs with current literature (Jenkins & Kerrigan, 2008). In the admission profession, senior staff typically hold upper-level management positions, charged with monitoring big picture issues such as budget and overall enrollment of the university, areas where data would be critical to making decisions. Those in junior staff roles are involved more in direct student services and are less likely to use data to make decisions or to have decision making ability. However, in order to have a data-driven culture, DDDM must take place at every level. It must not be the purview of only deans and directors. While this finding supports current literature, it highlights the need for increased training and development of junior staff regarding how to implement DDDM.

As was mentioned previously, the other variable found to be statistically significant when examining DDDM was current education endeavors (p=.032).
This finding contradicts both existing literature and general logic. A post-hoc analysis of the statistically significant chi-square result indicated more respondents than expected indicated they did not use DDDM, but were currently pursuing additional education. In a similar study, Jenkins and Kerrigan (2008) found that administrators who had received training on analyzing and using data were more likely to use data than those who had not received training. While the analysis only provides correlation and not causation, it would be logical to assume those currently enrolled in coursework related to their job duties would be integrating their coursework into their daily routine.

However, in this case, significantly more of those not using DDDM were enrolled in a program or coursework. In fact, only 13.47% of DDDM users are currently enrolled in a degree program at any level or taking courses as a non-degree seeking student while 30% of those who do not use DDDM indicated enrollment in a program or coursework. This finding prompted a closer look at the programs these respondents indicated they were pursuing. Not all respondents provided this information however, those that did provide this information indicated programs such as higher education, educational leadership and administration, and business administration. All of these programs would typically include coursework in statistics and other disciplines that would encourage DDDM. Additional review of the data found that most of those who indicated they did not use DDDM, but were currently enrolled in coursework were classified as junior staff.

This could explain this contradictory finding, as overall, fewer junior staff indicated using DDDM. However, further research with this group should be completed in order to better understand the nuances of this finding.
An open-ended question regarding influences was also included in the survey instrument. Many respondents indicated their educational background influenced their use of DDDM. Several also indicated their personal philosophies and their own desire to improve their situation and make good decisions drove their use of data in decision making. Past success in using DDDM and the current economic downturn were also noted as reasons respondents used DDDM. Overall, 97.7% of DDDM users believed anyone in their role should use data to make decisions.

The most commonly cited reasons for not using DDDM were that it was not part of the respondent’s job responsibilities, lack of access to resources in order to aid respondents in understanding and using data and information and data not being available to respondents in user-friendly formats. Respondents also cited the lack of a DDDM culture within their office or institution as a reason for not using DDDM. Most interesting to note was that 44 respondents (32.35%, n=102) believed (indicated ‘Strongly Agree’ or ‘Agree’) the data available to them were not as useful as other decision making resources at their disposal. Qualitative comments did not offer any additional insight into this finding. As research moves forward, it is notable that there is a group of individuals that perceive data is not as useful to them in their decision making processes as other resources at their disposal. It would also be interesting to determine what other resources these individuals value in their decision making process.

The qualitative comments from four of the twenty-three made statements indicated respondents did, in fact, use data in their decision making. These conflicting responses could be due to a misunderstanding of the question or the definition of DDDM provided in the survey. As research in this area moves forward it is important to recognize there could be some confusion regarding the definition of DDDM.
Research Question 3: If undergraduate admission professionals are using DDDM, in what ways are they using DDDM?

It has been established that the majority of undergraduate admission professionals who responded to this survey perceive themselves as using DDDM. A large portion of the survey instrument is devoted to determining the ways in which admission professionals use data in their decision making. As was stated previously, respondents were asked about how they make programmatic and/or policy decisions in their role and not how they made individual student admissions decisions, as this is often considered proprietary information. In Question 4 on the survey instrument, respondents were asked to indicate how frequently they used various types of data in programmatic or policy decisions in their role in admissions. Almost all respondents reported they used standardized test scores (95.81%) and student grade point averages (89.1%) most frequently (indicating a response of ‘Almost always’ or ‘Often’). This finding was expected as these are two frequent data points consulted for making individual student admissions decisions. Even though questions asked specifically about programmatic and policy decisions, these data points, in aggregate, could also inform many decisions in an admissions office. More than half of respondents reported using high school profiles, which would provide additional valuable information for making individual student admissions decisions. Admission professionals at most institutions are involved in some way for making student admissions decisions and therefore, it is reasonable to assume usage rates for such data points would be high.

More than half of respondents also reported using institutional budget and financial information frequently. With the current economic downturn in the United States, it is logical that decisions made at any level would consider budget and financial
information. Far fewer admission professionals reported using retention rates, graduation rates, financial aid information, information categorized by students’ race or ethnicity, gender or income level and percentage of students completing developmental education courses at their institutions frequently to make programmatic and policy decisions in their roles.

Respondents were asked in a forced-choice question (Question 15) to rank their top three data/resources in terms of frequency of use and importance to them in terms of their decision making. Student grade point averages and standardized test scores were cited as the most frequently used types of data. In terms of importance in decision making, student grade point averages, data analysis and standardized test scores were again listed most commonly as the most important resource in decision making. This confirms the findings from Question 4. Internal research produced by the respondents’ institutions and high school profiles were listed as both frequently used and important resources by admission professionals in this study. It is noteworthy that budget information was not cited as neither one of the most frequently nor as one of the most important types of information used by admission professionals.

Questions 6, 8, 10 and 12 in the survey instrument asked respondents to indicate the frequency with which they used data analysis, institutional research, outside research and third party research to make decisions regarding eleven programmatic and policy areas. By and large, the majority of respondents indicated they used data analysis, institutional research and third party research for all eleven areas presented. These results support previous discussion that there is likely some social bias in these findings. With that in mind, there are a few specific questions that warrant attention. For Question 6, a noticeably smaller group indicated they utilized data analysis when making decisions
about financial aid distribution (42.02% indicated “Almost always” or “Often”) and the awarding of scholarships (61.17% indicated “Almost always” or “Often”). This highlights an area of concern since both financial aid distribution and the awarding of scholarships are financial decisions. Financial aid distribution, in particular, has come under public scrutiny. If admission professionals are not using data analysis to make these types of decisions, it would be of significant interest to determine what resources they are utilizing in allocating these funds. This could be illustrative of a disconnect between program planning and budgeting.

*Question 12* asked respondents’ about their use of outside research. Noticeably more admission professionals indicated they did not use outside research frequently. In fact, more than half of respondents indicated they seldom or almost never used third party research to make decisions regarding territory management, programming, budgeting, admissions procedures/operations, predictors of academic success and awarding of scholarships. This finding could help to explain that while admission professionals indicate they use data in their decision making is frequent there is not significant literature pertaining to using DDDM in higher education. Based on this survey data, admission professionals do not use outside research. If they do not use it in their work, there would not be as great a demand to produce it.

**Research Question 4: What level of confidence do undergraduate admission professionals have in their ability to use DDDM?**

Overall, undergraduate admission professionals indicated they have confidence in their ability to use data in decision making. Specifically, 95.55% of respondents indicated they had confidence in their ability (by selecting either “Strongly Agree” or “Agree”) to use data to inform the decisions they make in their role in admissions.

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Additionally, 92.87% of respondents indicated they had confidence in their ability to use data to support departmental decision making. Furthermore, respondents felt confident about their ability to interpret data analysis, institutional, third party and outside research.

However, these findings are somewhat contradictory to much of the existing literature which asserts those in education lack the knowledge of how to use data to make decisions (Bettesworth, Alonzo & Duesbery, 2009; Fusarelli, 2008, Hutchinson & Lovell, 2004; Mandinach & Honey 2008). While most of this literature focuses on K through 12 education settings, it was hypothesized that the concepts and ideas presented in the K through 12 research were frequently transferrable to higher education. These data clearly show that undergraduate admission professionals feel confident in their skill set and have the methodological training to use data to make decisions. These responses could be due to the social desirability bias that has been previously discussed. In fact, Jenkins and Kerrigan (2008) discovered contradictory findings in follow-up phone interviews to their online survey. In their phone interviews, researchers found “many faculty and administrators may be uncomfortable analyzing data” despite answering to the contrary on the online instrument (Jenkins & Kerrigan, 39). Professionals could be indicating higher levels of confidence in their skill sets than might be found if interviews had been conducted a follow-up. With discussion of DDDM dominating the landscape of education at every level, it is reasonable to assume that professionals think they will be viewed more favorably if they indicate they use data in their decision making. Therefore, there is likely a degree of overestimation included in the response data collected by this survey. Alternatively, the findings from K through 12 research may not be transferrable to higher education settings. Further research will be needed to address this issue.
Finally, the results of Question 14, which asks respondents about the instruction they have received in various areas of qualitative and quantitative methodologies, offers some additional insight into Question 18. As was previously stated, the majority of respondents indicated they had received instruction in introductory statistics, evaluation, assessment and qualitative research methods. More than one-third stated they had received instruction in survey design and intermediate statistics. Some questions may arise regarding the high percentage of individuals with relatively extensively methodological training, particularly since they serve in roles that do not typically require that skill set. However, the level of education (highest degree attained) among respondents would seem to support their confidence with interpreting various types of data and information.

**Limitations**

Limitations were anticipated and considered throughout the research process and addressed prior to and during the study. It was acknowledged early in this study that response bias is common when using self-reported data, such as that collected through survey instruments. In general, self-reported data presents limitations because there is sometimes a gap between what a respondent actually does and what they choose to report through the instrument (Nardi, 2006). As was discussed in previous chapters, there is evidence throughout this survey and in existing literature of a specific type of response bias, social desirability bias, in instruments such as the one employed in this study. When it is clear, as in this case, that a particular viewpoint or action is desirable, respondents over-estimate their behavior. Admission professionals want to be viewed favorably by others and conforming to best practices. It is clear that DDDM has been established as best practice. Therefore, it is likely professionals over-estimated their use of data in order to be viewed as such, inflating results (Nardi, 2006). However, even in
light of these limitations, fielding a survey instrument was determined to be the best way to collect baseline data, answer the research questions and assess the decision making practices of individuals on large scale.

Another limitation of this study was survey fatigue which led to substantial missing data. There were many incomplete response sets from the survey that were included in the analysis. One of the benefits of Rasch analysis is the ability of the models to still produce reliable and valid results even with missing data (Bond & Fox, 2001; Wright & Masters 1982). Because of the exploratory nature of this study and the methodology utilized, it was deemed acceptable to include those incomplete response sets in the final analysis.

The generalizability of these results could be viewed as a limitation to this study. Because of the limited information available about individuals in the population, exact unit statistical analysis to verify the representativeness of the sample was not possible. However, contrasting units of analysis were used to compare proportions. In addition, using Rasch analysis addresses this issue by creating a measurement ruler against which others can compare themselves. Same unit statistical analysis would have been ideal, but its absence does not prohibit the answering of the research questions posited in this study. In addition, these results may be used to guide research and training for undergraduate admission professionals and be used a foundation for conducting similar research regarding other higher education professionals. Ultimately, this study has utility and usability to the profession which serves to counter any limitation presented.

**Professional Paradigm**

The usability and utility to the profession is the strongest aspect of this study. In the 2011 *State of College Admission* (Clinedinst, Hurley & Hawkins, 2011), published by the National Association for College Admission Counseling, colleges and universities
surveyed cited statistics/data analysis as the second most important skill for chief enrollment officers to possess. The most important skill cited by respondents was previous admission experience (Clinedinst, Hurley & Hawkins, 2011). The report also states that although the admission process is different at various institutions, the process “has attained a level of standardization that enables admission officers to move between institutions and apply similar practices” (Clinedinst, Hurley & Hawkins, 2011). This supports the previous discussion about the generalizability of this study. Although not every professional strives to become a chief enrollment officer, data literacy and statistical knowledge are becoming more important in the profession of college admission. Not only is the need for DDDM being cited by the public and the government, the recognition of its importance is seen by the professionals themselves as reflected in this recent study. The next step is to outline a clearly defined set of standard skills related to statistics/data analysis for this profession. Data literacy, based upon this set of core standards, needs to be assessed. Finally, training needs to be created to provide professionals in the field adequate and appropriate skills to meet the standards set forth.

**Recommendations for Future Research**

The findings from this study indicate high levels of confidence, knowledge and use of DDDM among higher education admission professionals. This differs from the existing literature which contends most education professionals do not have the knowledge to conduct DDDM. The next step for future research will be to explore ways to confirm or refute these findings. With empirical evidence indicating professionals perceive themselves to be using data to make decisions, a future course of research is to examine misuse of data. Studies focusing on the misuse of data will address issues of data literacy. For instance, this group of professionals state they use data and, overall, feel relatively confident using data. The question then becomes are they doing it
correctly? As was stated earlier, it would be difficult to determine this in the context of their work. However, another instrument could be constructed that would test the respondents’ knowledge and understanding of various qualitative and quantitative concepts.

Although the majority of professionals indicated they used DDDM in their roles, this is not reflected in the literature. This could be another opportunity for future study. If using data in decision making is a common practice, why is the literature in this area limited? It would be reasonable to expect that with the results from this survey, one would find extensive literature regarding higher education and DDDM. Yet, that is not the case. One explanation for this discrepancy could be that often enrollment data is considered proprietary. Regardless, this lack of discussion and sharing among professionals and researchers is most likely hindering the development and further use of DDDM.

Another direction for future research could be to conduct similar studies for other groups of higher education professionals. This study only focuses on a subset of higher education professionals-undergraduate admission professionals. The results of this study can specifically aid in guiding training and research specifically related to admission professionals. The survey instrument designed for this study can serve as a basis for research with other groups of higher education professionals, such as those in student life, registrar and alumni and development.

**Conclusion**

This is one of only two large-scale empirical studies regarding how higher education professionals use data in their decision making processes. Additionally, this study employed Rasch analysis to evaluate the validity and reliability of the survey instrument created. Other studies that have conducted large-scale analysis of higher
education professionals have not included in their publications any measures of reliability or validity of the survey instrument utilized-only data analysis has been included.

The results of this study show, overwhelmingly, undergraduate admission professionals perceive themselves as using data in making programmatic and policy decisions in their roles. The results also indicate admission professionals feel confident in their ability to interpret and use data to in their decision making. However, a previous study showed that in phone interviews following an online survey, respondents were less confident of their abilities than they had previously indicated (Jenkins & Kerrigan, 2008). It is also acknowledged that there is a certain degree of social desirability bias that must be considered with these results. In addition, it is commonly acknowledged that data collected via survey instruments is inherently biased because it is the collection of an individual’s perception and, in this case, a perception of their own behavior. However, regardless of the degree to which individuals are overestimating their use of DDDM, it is clear that educators believe they are using data in their decision making.

While it would be possible to supplement this with observation in the workplace, research could never fully verify the factors an individual takes into consideration when making a decision. We can recognize this bias when considering these results. However, the purpose of this study was to examine the perceptions of professionals of their decision making practices.

Without baseline empirical evidence like that produced by this study, it is difficult to continue research in this field or address issues of training for this group of professionals. This study has produced a large amount of data and information pertaining to this issue. It has also produced several opportunities for continued research and study of this topic. This study is multi-faceted and contributes to conversations about higher education, data-driven decision making and measurement. The empirical data regarding
higher education professionals and their use of DDDM adds to the existing literature.

The survey instrument not only contributes to this study, but also serves as an example as to how the Rasch model can be employed. In sum, the results of this study will serve as a platform for a future research agenda regarding higher education and data-driven decision making.
Appendix A
Survey Instrument

Email Text for introductory email:
In the next day, you will be receiving an email asking you to complete an online survey. You are receiving this survey because you have been identified by the National Association for College Admission Counseling (NACAC) as an admissions professional. This survey will ask you about how you use data, information and knowledge in your role in admissions.

This survey is being administered in order to assess the knowledge and habits of admission professionals in terms of using data in their work. The results collected by this survey will provide the basis for dissertation research about what specific knowledge admission professionals possess and how they use data in their work. Your answers will be combined with answers from other people taking part in the survey. When we write about the study to share it with other researchers, we will write about the combined information we have gathered.

This survey is being conducted by Kim Chaffer Schroeder under the guidance of Dr. Kelly Bradley at the University of Kentucky in partial fulfillment of the requirements for a doctoral degree. This survey is completely voluntary and all questions are optional. This survey should take approximately 20 minutes to complete. You may exit the survey at any time. This survey asks some basic questions about you, your institution, and your use of data, information and knowledge in your role in admissions. Please be candid in your responses. All responses will be kept confidential.

Please complete this survey within one week of receiving it. If you have any questions about this study, please do not hesitate to email (kimchafferschroeder@uky.edu). If you have any complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428. Again, we appreciate your time in completing this survey.

Sincerely,
Kim Chaffer Schroeder
Doctoral Candidate
Email text to accompany survey invitation (Emails 2 and 3):

You are receiving this survey because you have been identified by the National Association for College Admission Counseling (NACAC) as an admissions professional. This survey will ask you about how you use data, information and knowledge in your role in admissions.

This survey is being administered in order to assess the knowledge and habits of admission professionals in terms of using data in their work. The results collected by this survey will provide the basis for dissertation research about what specific knowledge admission professionals possess and how they use data in their work. Your answers will be combined with answers from other people taking part in the survey. When we write about the study to share it with other researchers, we will write about the combined information we have gathered.

This survey is being conducted by Kim Chaffer Schroeder under the guidance of Dr. Kelly Bradley at the University of Kentucky in partial fulfillment of the requirements for a doctoral degree. This survey is completely voluntary and all questions are optional. This survey should take approximately 20 minutes to complete. You may exit the survey at any time. This survey asks some basic questions about you, your institution, and your use of data, information and knowledge in your role in admissions. Please be candid in your responses. All responses will be kept confidential.

Please complete this survey within one week of receiving it. If you have any questions about this study, please do not hesitate to email (kimchafferschroeder@uky.edu). If you have any complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428. Again, we appreciate your time in completing this survey. Please click here to begin the survey.

Sincerely,
Kim Chaffer Schroeder
Doctoral Candidate
1. Are you currently employed at a four-year college or university?

- Yes
- No
Survey of Admission Professionals

2. Is your primary role in the admissions or enrollment management office at your institution?
   - Yes
   - No
Survey of Admission Professionals

3. Select the title that best describes your role in the admissions/enrollment management office. (You can select more than one answer.)

- [ ] Admissions Counselor
- [ ] Assistant Director
- [ ] Associate Director
- [ ] Director
- [ ] Chief Admissions Officer
- [ ] Chief Enrollment Officer
- [ ] Other (please specify)


Survey of Admission Professionals

Data-driven decision making (DDDM) is a common phrase used in education today. For this survey, we are specifically interested in the data you use to make programmatic and policy decisions related to your role in admissions.

For the purposes of this survey, DDDM will be defined as admissions professionals systematically collecting and analyzing various types of quantitative data to support programmatic and policy decisions in their role in admissions at their institution.
4. Please indicate how frequently you use the following types of data. Again, these statements refer to programmatic or policy decisions you make in your role in admissions.

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Almost always</th>
<th>Often</th>
<th>Beldom</th>
<th>Almost never</th>
<th>Not applicable</th>
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</thead>
<tbody>
<tr>
<td>I use standardized test scores to make decisions in my role in admissions.</td>
<td>C</td>
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<tr>
<td>I use student grade point averages to make decisions in my role in admissions.</td>
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<td>I use high school profiles to make decisions in my role in admissions.</td>
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<td>I use retention rates to make decisions in my role in admissions.</td>
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<tr>
<td>I use graduation rates to make decisions in my role in admissions.</td>
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<tr>
<td>I use the percentage of students successfully completing developmental education courses at my institution to make decisions in my role in admissions.</td>
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<tr>
<td>I use financial aid data to make decisions in my role in admissions.</td>
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<td>I use institutional budget and financial information to make decisions in my role in admissions.</td>
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<tr>
<td>I use information categorized by students' race or ethnicity to make decisions in my role in admissions.</td>
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<td>I use information categorized by gender to make decisions in my role in admissions.</td>
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<td>I use information categorized by students' income level to make decisions in my role in admissions.</td>
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5. What other information do you use in making programmatic and policy decisions in your role in admissions?
6. Please indicate how frequently you use data analysis to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions.

For this question, data analysis is defined as quantitative data that has been summarized, analyzed or transformed into useful information.

<table>
<thead>
<tr>
<th>Decision Area</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Not Applicable</th>
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<tbody>
<tr>
<td>I use data analysis to make decisions about admissions policies in my role in admissions.</td>
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<tr>
<td>I use data analysis to identify predictors of academic success in my role in admissions.</td>
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<tr>
<td>I use data analysis to make decisions about admissions procedures/operations in my role in admissions.</td>
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<tr>
<td>I use data analysis to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.</td>
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<tr>
<td>I use data analysis to make decisions about long-range strategic planning in my role in admissions.</td>
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<td>I use data analysis to make decisions about marketing in my role in admissions.</td>
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<td>I use data analysis to make decisions about territory management in my role in admissions.</td>
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<tr>
<td>I use data analysis to make decisions about financial aid distribution in my role in admissions.</td>
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<tr>
<td>I use data analysis to make decisions about the awarding of scholarships in my role in admissions.</td>
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<tr>
<td>I use data analysis to identify general areas for improvement in my role in admissions.</td>
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<td>I use data analysis to make decisions about budgeting in my role in admissions.</td>
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7. Are there any other programmatic or policy areas in which you use data analysis to make decisions? If so, please specify.
### Survey of Admission Professionals

6. Please indicate how frequently you use data analysis to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions.

For this question, data analysis is defined as quantitative data that has been summarized, analyzed or transformed into useful information.

<table>
<thead>
<tr>
<th>I use data analysis to make decisions about admissions policies in my role in admissions.</th>
<th>Almost always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost never</th>
<th>Not Applicable</th>
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<tr>
<td>I use data analysis to identify predictors of academic success in my role in admissions.</td>
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<td>I use data analysis to make decisions about long-range strategic planning in my role in admissions.</td>
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<td>I use data analysis to make decisions about marketing in my role in admissions.</td>
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<td>I use data analysis to make decisions about territory management in my role in admissions.</td>
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<td>I use data analysis to identify general areas for improvement in my role in admissions.</td>
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<td>I use data analysis to make decisions about budgeting in my role in admissions.</td>
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7. Are there any other programmatic or policy areas in which you use data analysis to make decisions? If so, please specify.
**Survey of Admission Professionals**

8. Please indicate how frequently you use institutional research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions.

For this question, institutional research is defined as research produced by your institution for internal use.

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<tr>
<th>Question</th>
<th>Almost always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost never</th>
<th>Not Applicable</th>
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<tr>
<td>I use institutional research to make decisions about admissions policies</td>
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<td>I use institutional research to make decisions about admissions procedures</td>
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<td>I use institutional research to make decisions about on-campus events</td>
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<td>I use institutional research to make decisions about long-range strategic</td>
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<td>I use institutional research to make decisions about marketing</td>
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<td>I use institutional research to make decisions about awarding of</td>
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<td>I use institutional research to identify general areas for</td>
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<td>I use institutional research to make decisions about budgeting</td>
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</table>

9. Are there any other programmatic or policy areas in which you use institutional research to make decisions? If so, please specify.

[Space for response]
10. Please indicate how frequently you use third party research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions.

For this question, third party research is defined as research produced by an outside firm, consultant or organization specifically for your institution.

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Almost always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost never</th>
<th>Not Applicable</th>
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<tbody>
<tr>
<td>I use third party research to make decisions about admissions policies in my role in admissions.</td>
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<tr>
<td>I use third party research to make decisions about financial aid distribution in my role in admissions.</td>
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<td>I use third party research to make decisions about awarding of scholarships in my role in admissions.</td>
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<tr>
<td>I use third party research to identify general areas for improvement in my role in admissions.</td>
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<tr>
<td>I use third party research to make decisions about budgeting in my role in admissions.</td>
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</table>

11. Are there any other programmatic or policy areas in which you use third party research to make decisions? If so, please specify.
12. Please indicate how frequently you use outside research to make the following decisions. These statements refer to programmatic or policy decisions you make in your role in admissions.

For this question outside research is defined as books, research studies, articles from journals, etc.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Almost Always</th>
<th>Often</th>
<th>Seldom</th>
<th>Almost Never</th>
<th>Not Applicable</th>
</tr>
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<tbody>
<tr>
<td>I use outside research to make decisions about admissions policies in my role in admissions.</td>
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<tr>
<td>I use outside research to identify predictors of academic success in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about admissions procedures/operations in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about long-range strategic planning in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about marketing in my role in admissions.</td>
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<td>I use outside research to make decisions about territory management in my role in admissions.</td>
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<td>I use outside research to make decisions about financial aid distribution in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about awarding of scholarships in my role in admissions.</td>
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<tr>
<td>I use outside research to identify general areas for improvement in my role in admissions.</td>
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<tr>
<td>I use outside research to make decisions about budgeting in my role in admissions.</td>
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</tbody>
</table>

13. Are there any other programmatic or policy areas in which you use outside research to make decisions? If so, please specify.
14. Thinking about your own skill set, please rate your level of agreement with the following statements regarding your confidence in working with data.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am confident in my ability to interpret data analysis.</td>
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<tr>
<td>I am confident in my ability to conduct data analysis.</td>
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<tr>
<td>I am confident in my ability to interpret institutional research.</td>
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<tr>
<td>I am confident in my ability to interpret third party research.</td>
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<tr>
<td>I am confident in my ability to interpret outside research.</td>
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<tr>
<td>I am confident in my ability to use data to inform the decisions I make in my role in admissions.</td>
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<tr>
<td>I am confident in my ability to use data to support departmental decision making.</td>
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</tbody>
</table>
15. Review the lists below and please indicate the three types of data you use most frequently and the three most important types of data you use in your decision making in your role in admissions.

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<thead>
<tr>
<th>Choice 1</th>
<th>Most Frequent</th>
<th>Most Important</th>
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<tr>
<td>Choice 2</td>
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<tr>
<td>Choice 3</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

16. Are there other data or information you use most frequently in making decisions in your role in admissions? If so, please specify.

17. Are there other data or information you find most important in making decisions in your role in admissions? If so, please specify.
18. I have received instruction in the following areas: (Check all that apply.)

☐ Assessment
☐ Evaluation
☐ Field studies
☐ Introductory statistics
☐ Intermediate statistics
☐ Advanced statistics
☐ Survey design
☐ Policy analysis
☐ Research design
☐ Grant writing
☐ Qualitative research methods
☐ Other relevant instruction (please specify)
Survey of Admission Professionals

This survey has been asking questions regarding your use of data in making decisions.

Again, for this survey data-driven decision making (DDDM) is being defined as admissions professionals systematically collecting and analyzing various types of quantitative data to support programmatic and policy decisions in their role in admissions at their institution.

19. Based upon the definition provided above, would you classify yourself as using data driven decision making in your role in admissions?

☐ Yes
☐ No
Survey of Admission Professionals

20. As someone who uses data driven decision making (DDDM) in your role in admissions/enrollment management, why is DDDM part of your practice?

21. As someone who uses data in decision making, rate your agreement with the following statements. Mark one answer per row.

- College leadership (president, chancellor, vice president) at my institution has influenced my use of data in my role.
- The board of trustees at my institution has influenced my use of data in my role.
- Deans or directors of admissions at my institutions have influenced my use of data in my role.
- State mandates/reporting standards have influenced my use of data in my role.
- Federal mandates/reporting standards have influenced my use of data in my role.
- Accreditation reviews have influenced my use of data in my role.

22. Are there other factors that have influenced your use of data in decision making? If so, please specify.

23. As someone who uses DDDM, do you believe anyone in your role should use data to make decisions?

- Yes
- No
24. As someone who does not use data driven decision making, to what extent do you agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not have time to use data to make decisions.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>It is not part of my job responsibilities to use data to make decisions.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>I do not have the research skills to understand and use data in my decision making.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>I do not have access to resources to aid me in understanding and using data and information.</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>The data that are available are not relevant to my role.</td>
<td>C</td>
<td>C</td>
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<td>The data in the institutions' student information system are not accurate and error free.</td>
<td>C</td>
<td>C</td>
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<tr>
<td>The data I need are not available in a user-friendly format.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>The office of institutional research (IR) is not responsive to requests for information.</td>
<td>C</td>
<td>C</td>
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<tr>
<td>The office of institutional research (IR) is not adequately staffed for the institutions' information and research needs.</td>
<td>C</td>
<td>C</td>
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<tr>
<td>The reports and other information the institution provides administrators and faculty are not typically clear and easy to follow.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>I am not able to obtain the information I need in a timely fashion.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>The research reports and other information the institution provides are generally not helpful to my work.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>The data available to me is not as useful as other decision making resources at my disposal.</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

25. Are there reasons you do not use data driven decision making, other than those listed in the previous question? If so, please specify.
Survey of Admission Professionals

Please tell us about your institution.

26. Using the ACT’s categorization of institutions provided below, indicate the total undergraduate enrollment at your current institution is approximately:

- Less than 5,000
- 5,001 to 15,000
- 15,001 or more

27. The institution at which I am currently employed is classified as:

- Public
- Private
- Other (please specify)

28. Please select the choice that most accurately describes your current institution using the ACT classification parameters below.

- Highly selective (middle 50% of ACT scores between 27-31 (SAT 1210-1390) or above)
- Selective (middle 50% of ACT scores between 22-27 (SAT 1020-1240))
- Traditional (middle 50% of ACT scores between 20-23 (SAT 940-1080))
- Liberal (middle 50% of ACT scores between 18-21 (SAT 860-1010))
- Open enrollment (middle 50% of ACT scores between 17-20 (SAT 820-970) or below)
- I don’t know.
Survey of Admission Professionals

Now tell us a little bit about yourself so that we may provide information about the people responding to this survey.

29. I am considered a:
   - Full-time employee
   - Less than full-time employee

30. I have been employed in the field of admissions for:
   - Less than one year
   - One to three years
   - Four to six years
   - More than six years

31. Please indicate the highest degree you have completed.
   - Bachelor's degree
   - Master's degree
   - Doctoral degree
   - Professional degree
   - Other (please specify)

32. In my current education endeavors,
   - I am pursuing a Bachelor's degree.
   - I am pursuing a Master's degree.
   - I am pursuing a Doctoral degree.
   - I am pursuing a Professional degree.
   - I am taking courses as a non-degree seeking student.
   - I am not currently pursuing any coursework or degrees.

33. Please indicate the major/program you are currently pursuing.

Survey of Admission Professionals

The final few questions are designed to help us better describe who responded to this survey.

34. I identify myself as:
   - Male
   - Female
   - Prefer not to answer

35. I am:
   - 21 to 25 years old
   - 26 to 30 years old
   - 31 to 34 years old
   - 35 to 39 years old
   - 40 to 44 years old
   - 45 years or older
   - Prefer Not to Answer
Thank you again for taking the time to complete this survey. Your responses to this survey will be used for research purposes only. Please direct any questions to kimchafferschroeder@uky.edu.
Appendix B

Variable Key for Survey

Question 1  Are you currently employed at a four-year college or university?

Question 2  Is your primary role in the admissions or enrollment management office at your institution?

Question 3  Select the title that best describes your role in the admissions/enrollment management office.

Question 4  Please indicate how frequently you use institutional research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions. For this question, institutional research is defined as research produced by your institution for internal use.
   a) I use standardized test scores to make decisions in my role in admissions.
   b) I use student grade point averages to make decisions in my role in admissions.
   c) I use high school profiles to make decisions in my role in admissions.
   d) I use retention rates to make decisions in my role in admissions.
   e) I use graduation rates to make decisions in my role in admissions.
   f) I use the percentage of students successfully completing developmental education courses at my institution to make decisions in my role in admissions.
   g) I use financial aid data to make decisions in my role in admissions.
   h) I use institutional budget and financial information to make decisions in my role in admissions.
   i) I use information categorized by students’ race or ethnicity to make decisions in my role in admissions.
   j) I use information categorized by gender to make decisions in my role in admissions.
   k) I use information categorized by students’ income level to make decisions in my role in admissions.

Question 5  What other information do you use in making programmatic and policy decisions in your role in admissions?
Question 6  Please indicate how frequently you use data analysis to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admissions. For this question, data analysis is defined as quantitative data that has been summarized, analyzed or transformed into useful information.

a) I use data analysis to make decisions about admissions policies in my role in admissions.
b) I use data analysis to identify predictors of academic success in my role in admissions.
c) I use data analysis to make decisions about admissions procedures/operations in my role in admissions.
d) I use data analysis to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.
e) I use data analysis to make decisions about long-range strategic planning in my role in admissions.
f) I use data analysis to make decisions about marketing in my role in admissions.
g) I use data analysis to make decisions about territory management in my role in admissions.
h) I use data analysis to make decisions about financial aid distribution in my role in admissions.
i) I use data analysis to make decisions about the awarding of scholarships in my role in admissions.
j) I use data analysis to identify general areas for improvement in my role in admissions.
k) I use data analysis to make decisions about budgeting in my role in admissions.

Question 7  Are there any other programmatic or policy areas in which you use data analysis to make decisions? If so, please specify.

Question 8  Please indicate how frequently you use institutional research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admission. For this question, institutional research is defined as research produced by your institution for internal use.

a) I use institutional research to make decisions about admissions policies in my role in admissions.
b) I use institutional research to identify predictors of academic success in my role in admissions.
c) I use institutional research to make decisions about admissions procedures/operations in my role in admissions.
d) I use institutional research to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.
e) I use institutional research to make decisions about long-range strategic planning in my role in admissions.
f) I use institutional research to make decisions about marketing in my
role in admissions.
g) I use institutional research to make decisions about territory management in my role in admissions.
h) I use institutional research to make decisions about financial aid distribution in my role in admissions.
i) I use institutional research to make decisions about the awarding of scholarships in my role in admissions.
j) I use institutional research to identify general areas for improvement in my role in admissions.
k) I use institutional research to make decisions about budgeting in my role in admissions.

Question 9 Are there any other programmatic or policy areas in which you use institutional research to make decisions? If so, please specify?

Question 10 Please indicate how frequently you use third party research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admission. For this question, third party research is defined as research produced by an outside firm, consultant or organization specifically for your institution.

a) I use third party research to make decisions about admissions policies in my role in admissions.
b) I use third party research to identify predictors of academic success in my role in admissions.
c) I use third party research to make decisions about admissions procedures/operations in my role in admissions.
d) I use third party research to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.
e) I use third party research to make decisions about long-range strategic planning in my role in admissions.
f) I use third party research to make decisions about marketing in my role in admissions.
g) I use third party research to make decisions about territory management in my role in admissions.
h) I use third party research to make decisions about financial aid distribution in my role in admissions.
i) I use third party research to make decisions about the awarding of scholarships in my role in admissions.
j) I use third party research to identify general areas for improvement in my role in admissions.
k) I use third party research to make decisions about budgeting in my role in admissions.

Question 11 Are there any other programmatic or policy areas in which you use third
party research to make decisions? If so, please specify?

Question 12  Please indicate how frequently you use outside research to make decisions regarding the following. These statements refer to programmatic or policy decisions you make in your role in admission. For this question, outside research is defined as books, research studies, articles from journals. etc.
a) I use outside research to make decisions about admissions policies in my role in admissions.
b) I use outside research to identify predictors of academic success in my role in admissions.
c) I use outside research to make decisions about admissions procedures/operations in my role in admissions.
d) I use outside research to make decisions about programming (on-campus events, campus visits, etc.) in my role in admissions.
e) I use outside research to make decisions about long-range strategic planning in my role in admissions.
f) I use outside research to make decisions about marketing in my role in admissions.
g) I use outside research to make decisions about territory management in my role in admissions.
h) I use outside research to make decisions about financial aid distribution in my role in admissions.
i) I use outside research to make decisions about the awarding of scholarships in my role in admissions.
j) I use outside research to identify general areas for improvement in my role in admissions.
k) I use outside research to make decisions about budgeting in my role in admissions.

Question 13  Are there any other programmatic or policy areas in which you use outside research to make decisions? If so, please specify?

Question 14  Thinking about your own skill set, please rate your level of agreement with the following statements regarding your confidence in working with data.
a) I am confident in my ability to interpret data analysis.
b) I am confident in my ability to conduct data analysis.
c) I am confident in my ability to interpret institutional research.
d) I am confident in my ability to interpret third party research.
e) I am confident in my ability to interpret outside research.
f) I am confident in my ability to use data to inform decisions I make in my role in admissions.
g) I am confident in my ability to use data to support departmental decision making.

Question 15  Review the lists below and please indicate the three types of data you use
most frequently and the three most important types of data you use in your
decision making in your role in admissions.

Question 16 Are there other data or information you use most frequently in making
decisions in your role in admission? If so, please specify.

Question 17 Are there other data or information you find most important in making
decisions in your role in admissions? If so, please specify.

Question 18 I have received instruction in the following areas: (Check all that apply.)

Question 19 Based upon the definition provided above, would you classify yourself as
using data-driven decision making in your role in admissions?

Question 20 As someone who uses data-driven decision making (DDDM) in your role
in admissions/enrollment management, why is DDDM part of your
practice?

Question 21 As someone who uses data in decision making, rate your agreement with
the following statements. Mark one answer per row.

a) College leadership (president, chancellor, vice president) at my
institution has influenced my use of data in my role.
b) The board of trustees at my institution has influenced my use in data in
my role.
c) Deans or directors of admissions at my institution have influenced my
use of data in my role.
d) State mandates/reporting standards have influenced my use of data in
my role.
e) Federal mandates/reporting standards have influenced my use of data
in my role.
f) Accreditation reviews have influenced my use of data in my role.

Question 22 Are there any other factors that have influenced your use of data in
decision making? If so, please specify?

Question 23 As someone who uses DDDM, do you believe anyone in your role should
use data to make decisions.

Question 24 As someone who does not use data in decision making, to what extent do
you agree or disagree with the following statements:
   a) I do not have time to use data to make decisions.
b) It is not part of my job responsibilities to use data to make
decisions.
c) I do not have the research skills to understand and use data in my
decision making.
d) I do not have access to resources to aid me in understanding and using data and information.

e) The data that are available are not relevant to my role.

f) The data in the institutions' student information system are not accurate and error free.

g) The data I need are not available in a user-friendly format.

h) The office of institutional research (IR) is not responsive to requests for information.

i) The office of institutional research (IR) is not adequately staffed for the institutions' information and research needs.

j) The reports and other information the institution provides administrators and faculty are not typically clear and easy to follow.

k) I am not able to obtain the information I need in a timely fashion.

l) The research reports and other information the institution provides are generally not helpful to my work.

m) The data available to me is not as useful as other decision making resources at my disposal.

Question 25 Are there reasons you do not use data-driven decision making, other than those listed in the previous question? If so, please specify?

Question 26 Using the ACT’s categorization of institutions provided below, indicate the total undergraduate enrollment at your current institution is approximately:

Question 27 The institution at which I am currently employed is classified as:

Question 28 Please select the choice that most accurately describes your current institution using the ACT classification parameters below.

Question 29 I am considered a: (Employment status)

Question 30 I have been employed in the field of admissions for:

Question 31 Please indicate the highest degree you have completed.

Question 32 In my current education endeavors,

Question 33 Please indicate the major/program you are currently pursuing.

Question 34 I identify myself as: (Gender)

Question 35 I am: (Age)
Appendix C

Variable Maps

Variable Map for Question 4

Person - MAP - Item

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EACH "#" IS 8. EACH "." IS 1 TO 7
Variable Map for Question 6

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EACH "#" IS 8. EACH "." IS 1 TO 7
Variable Map for Question 8

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| .### | Q8h Q8i
| .## | Q8d
| .### | |

0 .### + M Q8f Q8g Q8j
| .## | Q8c
| .### | |
| .## | Q8b
| .##### | Q8a Q8e
| .##### | T

-1 ####### +
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-2 .# +
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-3 . T+
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-5 .##### +
| <less> | <frequ>

EACH "#" IS 5. EACH "." IS 1 TO 4
Variable Map for Question 10

Each "#" is 5. Each "." is 1 to 4
Variable Map for Question 12

PROF - MAP - ACT

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## | S|S
## | Q12g | Q12h
## | Q12j | Q12e
### | M | Q12f
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Variable Map for Question 14

PROF | MAP | ACT
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Q14f
Variable Map for Question 21

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PROF - MAP - ACT
<more>|<rare>

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2  .********* 
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   .#  
   .#  |S Q21d
1  .# M+  Q21e
   .***** 
   .#  |Q21b
   .#  |Q21f
   .*****  
0  .# +M  
   .*****  
   .#  |S|
-1  .##### +  
    .|S  
    .### |Q21a
-2  .+ Q21c  
    .# |T|T
-3  .  
    .  
-4  .  
    .  
-5  <less>|<frequ>
```

EACH "#" IS 5. EACH "." IS 1 TO 4
Variable Map for Question 24

PROF - MAP - ACT

<more>|<rare>

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  XXXX | Q24c Q24h
  XXXX M | S Q24f
  XXXXXX |
  XXXXXXX | Q24j
0   XXXX +M Q24e Q24l Q24k
  XXXXXXX | Q24l
  XX   
  XXXXX | S Q24m
  XXX | Q24d Q24g
  XXXS | Q24b
     T
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  X   |
-1   X +
     T |

XXX |
-2   +

-3   +

X |
-4   +

<less>|<frequ>
REFERENCES


Kimberly Ann Chaffer Schroeder

Date of Birth: October 4, 1978

Place of birth: LaGrange, Illinois

Education
2004 M.P.A. University of Kentucky, Lexington, KY
Public Administration, Public Financial Management

2000 B.A. University of Kentucky, Lexington, KY
Economics and Political Science

Professional Experience
2011 to present Associate Dean of Admissions
Office of Admissions
Transylvania University
Lexington, KY

2007 to 2011 Associate Director of Admissions
Office of Admissions
Transylvania University
Lexington, KY

2006 to 2007 Assistant Director of Admissions
Office of Admissions and Financial Aid
University of Cincinnati College of Law
Cincinnati, OH

2005 to 2006 Admissions Counselor
Office of Admissions
Transylvania University
Lexington, KY

2004 to 2005 Analyst
Government Accountability Office
Atlanta, GA and Chicago, IL

2003 to 2004 Research Assistant
Interdisciplinary Human Development Institute
University of Kentucky
Lexington, KY

2000 to 2002 Admissions Counselor
Office of Admissions
University of Kentucky
Lexington, KY
Scholastic Honors
Omicron Delta Kappa
Pi Alpha Alpha

Published Reports
[Note: as part of GAO staff committee]


Peer-Reviewed Presentations

National

**Chaffer Schroeder, K.**, Rothstein, C., Shain, B., Spatig, B., Wonnell, T. Predictive Validity and All That Jazz—Are You Just Improvising or Do You Really Know the Score? National Association for College Admission Counseling; New Orleans, LA.

Ison, Deana, **Chaffer, K.**, Levitch, P. Should I Stay or Should I Go? National Small College Enrollment Annual Conference; Louisville, KY.

Regional

**Chaffer Schroeder, K.** (2010). Using Rasch Measurement to Evaluate Survey Quality: Examining Factors In Student College Choice. Paper presentation at Midwest Regional Educational Research Association annual meeting; Columbus, OH.


Professional Development and Training Sessions


**Chaffer, K.** (2008). What Are They Thinking? Survey Research in College Admissions. Texas Association for College Admission Counseling, Professional Development session, Annual Conference; Ft. Worth, TX

**Chaffer, K.** (2008). What Are They Thinking? Survey Research in College Admissions. Kentucky Association for College Admission Counseling, Professional Development session, Annual Conference; Covington, KY.

**Chaffer, K.** (2008). Government Relations 101. Kentucky Association for College Admission Counseling, Professional Development session, Annual Conference; Covington, KY.


Chaffer, K., Ison, D., White, P. (2001). 60 Tips for Better Counseling in 60 Minutes. Kentucky Association for College Admission Counseling, Professional Development session, Annual Conference; Owensboro, KY.

**Awards and Recognition**

**Service**

<table>
<thead>
<tr>
<th>Period</th>
<th>Role</th>
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</thead>
<tbody>
<tr>
<td>2010 to present</td>
<td>Faculty Advisor, Alpha Omicron Pi, Transylvania University</td>
</tr>
<tr>
<td>2005 to 2009</td>
<td>Scholarship Selection Committee, Robinson Scholars Program</td>
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<tr>
<td>2001 to 2004</td>
<td>Heart Walk Volunteer Recruiter American Heart Association, Lexington, KY</td>
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**Professional Organizations**

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<tr>
<td>2011-present</td>
<td>National Association for College Admission Counseling, Board Director, Coordinator of the Affiliate Presidents Council, Coordinator-Elect of the Affiliate Presidents Council, and Imagine Grants Committee</td>
</tr>
<tr>
<td>2011-present</td>
<td>Pennsylvania Association for College Admission Counseling, Member</td>
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<td>2011-present</td>
<td>Ohio Association for College Admission Counseling, Member</td>
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<td>2011-present</td>
<td>Southern Association for College Admissions Counseling, Member</td>
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<td>2011-present</td>
<td>Potomac and Chesapeake Association for College Admission Counseling, Member</td>
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<tr>
<td>2009-present</td>
<td>Virginia Association of Collegiate Registrars and Admissions Officers, Member</td>
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<tr>
<td>2007-present</td>
<td>Texas Association for College Admission Counseling, Member</td>
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<tr>
<td>2007-present</td>
<td>Illinois Association for College Admission Counseling, Member</td>
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<tr>
<td>2000-present</td>
<td>Kentucky Association for College Admission Counseling, Past-President, President, President-Elect, Chief Delegate, Government Relations Chair, Chair of Conference Programming</td>
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<tr>
<td>2009-2010</td>
<td>Mid-Western Educational Research Association, Reviewer, Discussant</td>
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<tr>
<td>2008-2010</td>
<td>Kentucky College Access Network, Vice-Chair</td>
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<tr>
<td>2000-2003</td>
<td>Kentucky Association of Collegiate Registrars and Admissions Officers, Chair, New Counselor Workshop</td>
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