

A DESCRIPTIVE STUDY OF STUDENTS WITH DISABILITIES
AT MONTANA STATE UNIVERSITY BILLINGS

by
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*“No narrative is ever fully comprehensive, no explanation total,
and the balance between description and analysis is painfully elusive”
~J. H. Elliot Historian*

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ABSTRACT

The purpose of this study was to describe and analyze how the characteristics of age, major and type of disabilities for students who received services through Disability Support Services at Montana State University-Billings have changed from 1999 to 2011. Furthermore, this analysis contrasted local trends for types of disabilities with national trends. Additionally, there was an analysis of how local and national trends may have been impacted by five recent watershed events. The five events include the No Child Left Behind Act; the Higher Education Opportunity Act; the Americans with Disabilities Amendment Act; the Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill) and Iraq and Afghanistan wars. The results of this study revealed that non-traditional age students are the majority of students with disabilities at MSU- Billings. Additionally, they are enrolled in proportionally larger numbers than their nondisabled peer age group, which is consistent with national data. Based on results there was also a total increase in numbers in almost all of the types of disability categories including a clear trend in the increase in students diagnosed with Asperger's Syndrome. These increases are consistent with national trends. Additionally, a comparison of watershed events with local and national enrollment trends of certain types of disabilities reveal that legislation in 2008 broadened the definition of intellectual and cognitive disabilities for students in higher education. Also, funding for veterans was increased with the New GI Bill. This has resulted in increases in enrollments of diverse groups of students including those with intellectual and/or cognitive impairments, TBI, and psychological impairments. Locally, the shift of students with disabilities at MSU Billings from orthopedic and mobility impairments to mental, emotional or psychological conditions has also been demonstrated by a large increase in number of students with ADHD, TBI, Asperger's Disorder and psychological impairment since 2008. The results support an annual review of these groups by policymakers in high education to provide accommodation and mental health support services to those with specific types of disabilities such as veterans with TBI or students with psychological disabilities.

CHAPTER ONE

INTRODUCTION TO THE STUDY

The earliest research that identifies the number of students with disabilities in higher education is a 1978 survey of their enrollment in selected public colleges and universities (HEATH, 1998). Through the data collection and reporting efforts of federal agencies such as the National Center for the Study of Postsecondary Educational Supports (NCSPEs, 2000), researchers know that enrollment of freshman with disabilities rose from three percent in 1978 to more than 11% in 2003 and that these numbers continue to increase (National Council on Disability [NCD], 2003). The increase of students with disabilities in college and universities was concurrent with an overall increase in the general U.S. population, which has quadrupled in number in the last twenty-five years (Olney, Kennedy, Brokelman, and Newson, 2004). There has also been a simultaneous increase in the variety of types of disabilities among college students as federal definitions broaden, and now include hearing, speech, orthopedic, learning, health-related, visual impairments, and other disability-related conditions (National Center for Education Statistics [NCES], 2003; NCES, 2010). The increase in numbers of students with disabilities in higher education resulted from legislation including the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) which outlined the civil rights for students with disabilities to access higher education (NCD, 2003, United States Government Accountability Office [GAO], 2009). The GAO also reports five events in the recent history of higher education that increased access to

higher education for students with disabilities including (1) the Higher Education Opportunity Act (HEOA), (2) Americans with Disabilities Amendment Act, (3) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill), (4) No Child Left Behind Act of 2001, and (5) an increase of soldiers with disabilities resulting injuries from the war in Iraq and Afghanistan (GAO, 2009).

As the number of students with disabilities in higher education increases, so does the need to identify types of disabilities and provide appropriate support services. The NCD (2003) reports that “in order to provide a comprehensive knowledge base from which recommendations for evidence-based practices and policies may be determined, it is necessary to know the status of people with disabilities today in post-secondary education” (p. 4). Evidence-based practices include obtaining a comprehensive knowledge of each type of disabilities to better assess students’ needs for physical and educational accommodations in higher education. Currently, most post-secondary institutions rely on disability support service providers on campus to assist with accommodations in the classroom which may include such provisions as note-taking, recording lectures, accessible classroom location, assistive computer technology, document conversion (Braille, large print, tape) and/or alternative testing taking.

Despite the growing numbers of students with disabilities, many fail to graduate. Therefore, critical services from higher education institutions are necessary for students with disabilities for retention and persistence (Barnard-Brak, 2010; Paul, 2000; Quick, Lehmann and Deniston, 2003). In addition, college personnel must be knowledgeable of the type of disability and specific characteristics of the student so that support services

can accurately match their needs to a variety of physical and academic accommodations (NCD, 2003).

Currently, higher education institutions are required to gather data through the National Postsecondary Student Aid Study on two categories of students: one group with disabilities and the other group consisting of students without disabilities, enrolled in either undergraduate or graduate higher education institutions (NCES, 2010). These two categories include a description of various characteristics of students such as gender, race/ethnicity, dependency status, age, attendance status, veteran status and field of study (NCES, 2007; NCES 2009). These data are useful for research about students with disabilities. For example, Stodden, Jones, and Chang (2002) concluded that age matters for students with disabilities and younger adults do not persist as well as their peers, and take longer to graduate. Having a disability also impacts employability. Stodden et al. (2002) found that only 67 percent of students with disabilities who graduate with a baccalaureate degree gain full-time employment following graduation compared to 73 percent of non-disabled students with a similar degree. They also found that the greater the severity of the disability the more specific the institutional planning should be for student and educational support services, since the type of disability can potentially lengthen the time to graduate. In addition, ethnic and cultural backgrounds tend to impact persistence with regard to increasing participation, self-advocacy, and progress in colleges and universities (Stodden, et al., 2002).

National data indicate changes in selected characteristics of students with disabilities throughout the nation. The NCES provides analysis of the changes in

characteristics of students with disabilities in post-secondary institutions in 1995-96 and 2007-08 (NCES, 1997; NCES, 2009). During this period, there has been an increase in the percentage of women and individuals from different race/ethnic groups among groups of students with disabilities. The data also show that more students with disabilities were living at home with parents in a dependent status in 2007-08 than in 1995-96. Also, during this same period the percentage of the disabled student population that is nonwhite has increase from 26.1% to 36.40%.

Therefore the findings of the NCES confirm that the population of students with disabilities in the U.S. is varied and continuously changing with regard to race/ethnicity, major, gender, and part-time or full-time attendance, indicating a need for accurate data in order to provide appropriate support services. On both national and local levels, for example, veterans with disabilities are currently returning from duty in Afghanistan and Iraq, and enrolling in higher education institutions (GAO, 2009).

In addition to specific characteristics of students with disabilities, the *type of disability* is particularly important for support service providers in order to assist college students with access to the classroom and increase their potential for success. Knowing about the specifics of a student's disability allows for a variety of accommodations which can be tailored to the person's disability (Bremmer, Timmons and Johnson, 2007). There has also been important research into the types of disabilities including visual impairments; hearing impairments; learning disabilities; orthopedic; psychological and mental health impairments; and other disorders (NCD, 2003). Each type of disability presents specific challenges for a student with regard to academic success and requires

specific accommodation and support. Data from the NCES (1999) highlight the critical need for local universities to identify the number of students with specific types of disabilities in order to better assess students' needs for physical and educational accommodations in higher education.

Context of the Study

Montana State University Billings (MSU Billings) is an urban university of approximately 4500 students. The university provides associate, bachelor and master degrees in five separate colleges including Arts and Sciences, Business, Allied Health Professions, Education, and Technology (Montana State University Billings, 2011). MSU Billings provides support services to students with disabilities who specifically request accommodations for classes through the Disability Support Services office (DSS) which is located on the main university campus. An administrator of support services describes this program serving "two hundred students with disabilities" who require accommodations and academic support services (administrator of support services, personal communication, September 21, 2010). Additionally, she surmises that over time there have been an increasing number of students served with a broader range of disabilities, although she has no data to confirm her assumptions. An administrator of support services believes that an analysis of these data would be useful since it would assist her with raising the awareness of faculty and administration of the need to tailor accommodations for specific disabilities. One example is document conversion of course material to Braille for blind students or providing an interpreter to assist a student with a

hearing impairment (administrator of support services, personal communication, September 21, 2010).

At MSU Billings, data about students with disabilities have never been aggregated and analyzed. As a result, DSS does not have access to descriptive analysis of these characteristics of students with disabilities requiring accommodations. If local trends follow those at the national level, the types of disabilities at MSU Billings are likely to be changing over time. Therefore, based on an interview with an administrator of support Services at MSU Billings (personal communication, September 21, 2010), there is a need for administrators and faculty to possess an accurate description of the characteristics of students with disabilities in order to document outcomes of students.

Statement of the Research Problem

The problem addressed in this study was that administrators and faculty at MSU Billings needed a description and analysis of the trends of age, major, and type of disabilities for those students who received services through Disability Support Services from 1999 to 2011. The descriptive data obtained from DSS at MSU Billings for this research was nominal and included the following categories:

- Age (18-25, 26-35, 36 and older).
- Major by College (General Education, Business, Technology, Arts and Sciences, Education and Allied Health Professions),
- Types of disability (physical/orthopedic impairment, sensory impairment, psychiatric impairment and cognitive impairment).

Statement of the Purpose

The purpose of this study was to describe and analyze the trends of age, major and type of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011 and contrast them to the MSU Billings general population. Additionally, this analysis of one small university was meant to inform higher education administrators of the impact of watershed events and legislation on students with disabilities so they can plan for policy changes.

Descriptions in this study included the different types of disabilities of students in order to provide insight into the numbers of individuals with severe limitations in contrast to those individuals with less severe conditions. There is no universally agreed upon definition of 'severe disabilities'. However, it has historically included individuals who were considered profoundly intellectually challenged and required constant support services with one or more major life activities. The National Dissemination Center for Children with Disabilities (2004) reports that characteristics of individuals with severe disabilities may include significant speech or impairments, barriers with mobility and memory impairments which often require support with major life activities. In addition, 'severe disabilities' can include those individuals with multiple diagnosed disabilities.

An additional purpose of the study was to provide information to the colleges at the university regarding the proportions of students with disabilities who declared majors in their programs. There are five colleges housed in the university, including the College of Arts and Sciences, which includes majors in the sciences, mathematics, social sciences and the arts and the College of Education, which includes majors leading to licensure in

K-12 teaching, such as elementary and special education. The College of Allied Health Professions offers degrees in human services, health professions and rehabilitation. The College of Business offers degrees in programs such as management, accounting, and economics, while the College of Technology offers degrees and certificates in vocational specialties, such as mechanics, power plant technology and practical nursing (Montana State University Billings 2011).

Statement of the Research Questions

There were three research questions for this study:

- 1) How have the characteristics of age, major and type of disability of the Disability Support Services (DSS) subsample changed from 1999 to 2011?
- 2) How have the characteristics of age, major and type of disability of the DSS subsample changed compared to the general MSU Billings population from 1999 to 2011?
- 3) How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011?

Significance of the Study

The significance of this study was that it would, for the first time, provide information about students with disabilities at MSU Billings to administrators and faculty. Administrators and faculty of each college benefit from the knowledge of ages, majors and the types of disabilities of students in their programs in order to make informed decisions about accommodations. The student support service providers at DSS

at MSU Billings can use this information to know the types of disabilities and other important characteristics, such as major, and age, so that they can anticipate the accommodations that will be needed. Instructors will also be more informed about the types of disabilities the students at MSU Billings have and results can be used to provide professional development to faculty. Additionally, by using MSU Billings as a microcosm of the impact to key legislation and events on students with disability in higher education during the period from 1999 to 2011, this study offers administrators an opportunity to see the impacts and plan policy for this group.

Framework of the Study

The rationale for this study was to provide a description of the trends of age, major and type of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011 to administrators and faculty at MSU Billings so that they can be more informed decisions about the accommodations and support services.

The framework for this study included a description of students with disabilities from academic years 1999-2011 as well as an overview of: 1) legislative; 2) economic; and 3) watershed historical events during those years that impacted higher education at the national level since these themes are each crucial to the current understanding of students with disabilities at the local level and how to provide appropriate accommodations and support services.

Legislative support of individuals with disabilities opened up higher education institutions to increasing numbers of students who historically were not provided equal access to an education. This legislation included the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) which outlined the civil rights for students with disabilities to pay the way for access to higher education (NCD, 2003, GAO, 2009).

Economic gains from equal access to an education have increased the odds that upon graduation the student with a disability will have a greater opportunity for higher wage employment.

The GAO (2009) also reports five watershed events in the recent history of higher education that increased access to higher education for students with disabilities including (1) the Higher Education Opportunity Act (HEOA), (2) Americans with Disabilities Amendment Act, (3) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill), (4) No Child Left Behind Act of 2001, and (5) an increase of soldiers with disabilities resulting injuries from the war in Iraq and Afghanistan.

Thus, students with disabilities at MSU Billings have benefited from, and continue to be impacted by, these three sources of change in higher education. The recent watershed events were also included in chapter four along with graphs for specific trends for disabilities (ex: traumatic brain injury) to provide background history (ex: War in Iraq and Afghanistan).

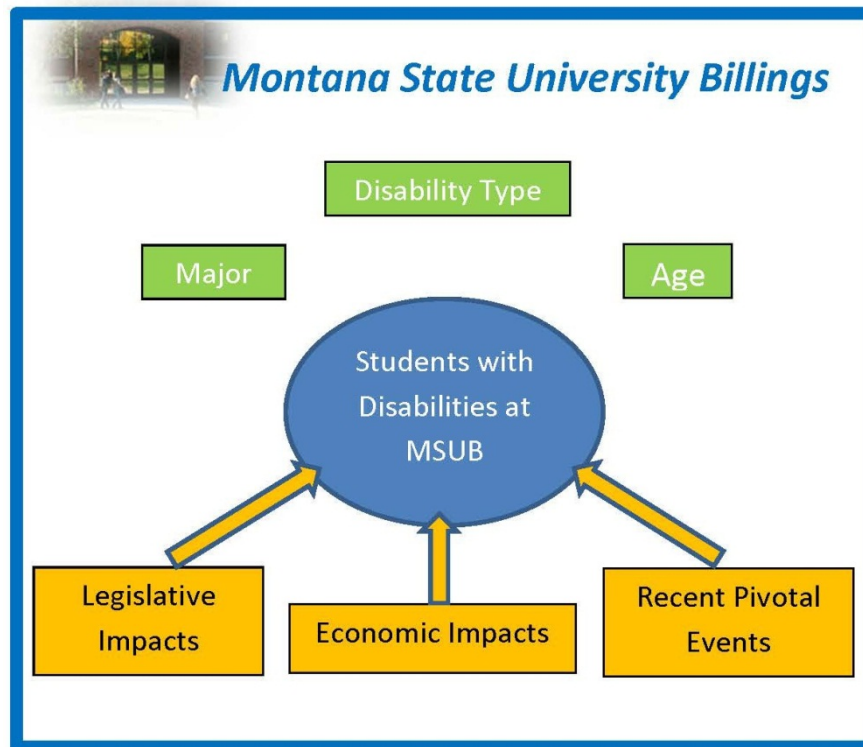


Figure 1. Conceptual Framework: Impacts and Selected Students Characteristics

Research Design

The study was quantitative in design. It was a non-experimental and descriptive analysis over a twelve year period of a population of students enrolled at MSU Billings who self-identified as disabled in order to receive student support services. The non-experimental design resulted from an inability to perform random assignment of participants to groups (Gliner, Morgan and Leach, 2009). The number of students in this study ranged from 181 to 267 and only included those students accepted by DSS for services for the academic years 1999 to 2011.

Specific characteristics of students described in this study included age, major and type of disability. There were two analytical approaches used for the data analysis. First, descriptive data and graphs provided an overall view of the trends from 1999 to 2011. The second approach to data analysis used a descriptive trend analysis based on historical “events” to analyze the data in order to contextualize what happened with disabilities at MSU Billings based on social, economic, and political forces during the period studied, 1999-2011.

Definitions

Student with Disabilities: For the purpose of this study *student with disabilities* was defined as those students who identified themselves as “disabled” to Disability Support Services (DSS).

Disability: For the purposes of this study *disability* was defined using the Rehabilitation Act of 1973 stating:

- 1) a mental or physical impairment that substantially limits one or more major life activities (sometime called an actual, or present disability); or
- (2) a record of a mental or physical impairment that substantially limits one of more major life activities (sometimes referred to as a history of a disability); or
- (3) being ‘regarded as’ having a mental or physical impairment that substantially limits one of more major life activities (also called a perceived disability) (Bremmer et al, 2007, p. 5).

Accommodation: For purposes of this study an *accommodation* was “any type of manipulation or adaptation to an environment to provide equal opportunity for individuals who may have a disability” (Culligan, 2009, p. 9). This can occur through a modification of the classroom environment and/or instructor adjustments to the course

(e.g.: flexibility in testing) or other services provided to the student. Bremmer et al.

(2007) also lists the following examples of common accommodations:

- Accessible classroom location;
- Advance notice of assignments;
- Assistive computer technology;
- Note-takers;
- Readers;
- Interpreters;
- Lab or library assistants;
- Open/closed captioned videos/films;
- Course or program modifications;
- Document conversion (Braille, large print, tape);
- Syllabus provided prior to beginning of the class;
- Exam modifications (e.g., extend time, alternative test format, quiet space for testing); and
- Priority registration. (p. 7)

Assistive Technology: For purposes of this study *assistive technology* included any technology or “equipment used to achieve accommodation for the student so they can achieve the goals of the class. This technology or equipment can include (but is not exclusive to) tape recorders, Braille, magnification devices, film captioning and textbooks on tape” (Culligan, 2009, p. 9).

Selected Characteristics: For purposes of this study *Selected Characteristics* referred to the term used by the NCES to describe specific attributes of students with disabilities which for this study included age, major and type of disability (NCES, 2009).

Student Support Services: For the purposes of this study *Student Support Services* was defined using the mission statement of DSS at MSU Billings which is to facilitate

MSU Billings’ goal of making its programs, services and activities accessible to students with disabilities... [and] enhance awareness of and sensitivity to the needs of persons with disabilities at MSU Billings and to ensure full access to educational opportunity for persons with disabilities

as required under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (Montana State University Billings 2011a).

Assumptions and Limitations

This study relied on the assumption that students were truthful when responding to questions by the interviewer at DSS. Therefore, the data gathered can be considered reliable (Gliner et al., 2009). Also, based on preliminary data obtained from DSS, there was a range of 181 to 267 students who have applied for services during academic years 1999 to 2011, which provided a large enough sample to justify a descriptive analysis since it was greater than 30. Therefore, there were a sufficient number of participants to draw quantifiable conclusions in order to describe the trends of age, major and type of disabilities over time (Gliner, et al., 2009). Also, because the same interview instrument and criteria for acceptance have remained consistent since data collection began in the academic year 1999-2000, the data gathered can be considered as reliable.

There were a number of threats to the validity of this study. This study may be impacted by the fact that not all students who have a disability use DSS and the study does not include these individuals. There are students who are reluctant to admit they have a disability and those who are not even aware they have a disability. Also, because student population was limited to MSU Billings, generalization to other institutions may not be appropriate. In addition, students may have had more than one disability but chose to disclose only the primary condition, which they reported during each academic year. Furthermore, since this is an annually gathered cross-sectional sample of students with disabilities it can only be considered a 'snapshot' since it did not include longitudinal

data. Finally, students may face an economic barrier to obtaining documentation for services, such as a diagnosis of a learning disorder, which may require a psychological evaluation that is so cost prohibitive the individual may elect not to pursue support services necessary to succeed in higher education.

Summary

The problem statement, purpose, research questions and theoretical framework for this study are discussed and explained in this chapter. The research structure is outlined along with important considerations related to assumptions and limitations of this study. In addition, definitions are provided to inform the reader. In Chapter Two a literature review will synthesize and evaluate the current literature on the topic

CHAPTER TWO

REVIEW OF RELATED LITERATURE

A thorough review of relevant literature was conducted in order to understand the problems related to barriers for college students with disabilities. The primary criterion for the selection of articles in the literature was that the article title or abstract must specifically address: 1) historical perspectives of institutions on students with disabilities in higher education; 2) legislative perspectives of students with disabilities; 3) characteristics of students with disabilities in higher education from 1978 to 2010; or 4) accommodations of students with disabilities in higher education. Accordingly, studies from secondary sources, conference papers, or articles from non-referenced journals were not included in the literature review.

Themes of the Literature

The context of the problem, which focused on the need for administrators and faculty at MSU Billings to obtain data to describe the students with disabilities on campus, results from legislative, economic and institutional changes in higher education at the national level. Therefore, these three themes are each crucial to our current understanding of students with disabilities and how to provide accommodations and support services. Legislative support of individuals with disabilities opened up higher education institutions to increasing numbers of students who historically were not provided equal access to an education. In turn, economic gain from equal access to an

education insured that upon graduation the student with a disability had a greater opportunity for higher wage employment. Also, the literature points to institutional trends in higher education in response to federal legislation which have resulted in public universities providing support services to students with disabilities to equalize academic success. To that end, critical services from higher education institutions are necessary for retention and persistence, and college personnel must know the status of the individual student requiring specific services or accommodations to be successful (Barnard-Brak, 2010; NCD, 2003; NCES, 2003; NCES, 2010; Paul, 2000; Quick, et al., 2003).

There are ongoing challenges to students with disabilities to accessing higher education institutions and persisting to graduation. The literature supports the central role data collection plays in distinguishing students with disabilities and specifying what support services would assist them with persistence (NCES, 2010; NCD, 2003). These support services include accessible classrooms, note-takers, assistive computer technology, examination modifications and other assistance (Bremmer et al., 2007).

Legislative Support of Diverse Groups to Access Higher Education

The history of higher education and students with disabilities is complex, and the role of government has changed over time. However, to understand how students with disabilities have accessed higher education, it is necessary to identify the role of specific legislation over the last 75 years. Since Jefferson first endorsed a public education for all citizens, American policy for higher education has gradually become more inclusive for

all groups (Goodchild, 1997). Until the early twentieth century, access to higher education was denied to most demographic sub-groups. For example, women and minorities were denied access to most private and public institutions until the 1920s to 1930s. Simultaneously, changes in the United States' economy further prioritized the need for a college education to insure that a career choice would also be financially gainful. As a result of a societal need for a more educated workforce, a more diverse group of students accessed vocational technical school or college in order to obtain higher wage employment. As a result of changing government policies and public perceptions, the educated work force has grown to include women and minorities, as well as individuals with disabilities (NCD, 2003).

Veterans with Disabilities

Following World War II, several public policy changes occurred regarding the overall treatment and benefits for individuals with disabilities. As veterans returned to private life following World War II, federal public policies changed toward soldiers with disabilities. Additional benefits such as the G.I. Bill were initiated to assist with training and employment. Despite the G. I. Bill for veterans, however, access to higher education remained elusive for many individuals with disabilities (Goodchild 1997; Rubin, 2008).

A breakthrough occurred during the Eisenhower Administration in the 1950s which specifically identified individuals with disabilities as a group of Americans who were disenfranchised from employment and training opportunities. This may have been a result of President Eisenhower's experiences with, and empathy for, veterans with disabilities from World War II. This movement by the Eisenhower Administration

insured some degree of employment for individuals with disabilities and resulted in an increase in federal matching dollars for state programs. These programs funded job placement and vocational technical training, and were later expanded in the 1960s and 1970s to include a college education, which further increased the likelihood of gainful employment (Rubin, 2008).

More recently, the Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 “New” GI Bill) was passed to provide additional educational benefits for veterans who served after September 11, 2001, many of whom experienced a disabling condition. This has already resulted in an increase in numbers of veterans with disabilities attending higher education institutions (GAO, 2009). In addition, Church (2009) indicates that the Global War on Terror has resulted in veterans having many ‘invisible’ wounds that will be barriers to using tradition services including depression, post-traumatic stress disorder and traumatic brain injury. As a result administration and faculty will “need to engage veterans and utilize their strengths in designing welcoming campuses that facilitate success for adult learners” (p. 46).

The Rehabilitation Act of 1973 and Amendments

The legislation creating a foundation for individuals with disabilities to access higher education was Section 504 of the Rehabilitation Act of 1973 (Stodden, et al., 2002). Additional public policy changes occurred in higher education with the legislation Individuals with Disabilities Education Act (IDEA), The Americans with Disabilities Act [ADA] (NCD, 2003, GAO, 2009), and Title II of the Health and Education Act (HEA) under No Child Left Behind (NCLB). IDEA mandates that high schools receiving federal

funding provide means to facilitate vocational and academic success after high school. This includes academic preparedness for students with disabilities prior to college (NCD, 2003; Rubin, 2008). In addition to the Rehabilitation Act of 1973, which mandates structural accommodations in federal funded buildings for students with disabilities, the ADA initiated in 1995 requires that academic accommodations be provided for students with disabilities. However, these requirements are nonspecific, and colleges are allowed to use broad discretion in defining reasonable accommodation, based on a risk of undue financial impact on the institution.

Recent Watershed Events

Five watershed events in the recent history (2001-present) can be identified that increased access to higher education for student with disabilities. These include the Higher Education Opportunity Act (HEOA), Americans with Disabilities Amendment Act, Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill), No Child Left Behind Act of 2001 and soldiers with disabilities resulting from the war in Iraq and Afghanistan (GAO, 2009).

- No Child Left Behind Act of 2001 (NCLB) requires measure of achievement for students with disabilities in K-12 by identifying them as a subgroup to receive additional special education services to increase the likelihood of success should they pursue higher education (United States Department of Education, 2008).
- The Higher Education Opportunity Act (HEOA) in 2008 was established to support students with disabilities in higher education

- Americans with Disabilities Amendment Act of 2008 (act to amend ADA) was passed to provide more comprehensive coverage that included students with disabilities.
- Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill) to provide additional educational benefits for veterans who served after September 11, 2001, many of whom experienced a disabling condition (GAO, 2009).

Overall, the research is indicative of a trend of increased enrollment as a result of lawmakers recognizing the rights of all citizens, regardless of disability, to participate in higher education. This has resulted in more gainful employment and a higher standard of living for people with disabilities. Recent demographic data suggest that individuals with disabilities are experiencing greater access to higher education and are entering into professional employment with an increased earning capacity (NCD, 2003).

However, despite legislative mandates, and changes intended to remove academic and occupational barriers, students with disabilities continue to face significant barriers in higher education (Stodden, et al., 2002). Nevertheless, the numbers of individuals with disabilities is one of the fastest growing subgroups of students entering high education today although they continue to be less likely to attend than non-disabled (Bremmer et al., 2007). This is important for institutions because funding is based on enrollment, so it benefits institutions to retain all students, including those with disabilities.

Economic Incentives for Individuals with Disabilities to Attend Higher Education

Individuals with disabilities continue to be twice as likely as the nondisabled to be living in poverty and those who are employed are chronically underemployed in lower wage and nonprofessional employment (NCD, 2003; Stoddard, 1998). In addition, there are other socio-economic disadvantages for individuals with disabilities. The employment rate of individuals with a disability of working age is less than half of the rate for the non-disabled population (Bremmer et al., 2007). Furthermore, even with a college degree, individuals with a disability do not earn the same wage as non-disabled college graduates (HEATH, 2011).

Additionally, only 22.6% of individuals with disabilities are employed as compared to 56% of the non-disabled (Bremmer et al., 2007). However, the contrast becomes more alarming among those with profound impairments, such as blindness or cognitive disabilities, where employment rates drop even more dramatically (Kiernan, 2002). Although a college degree increases the likelihood of employment, only 67 % of individuals with disabilities earning a degree will access employment, in contrast to 73 % of the nondisabled population (NCSPES, 2000).

Typically, the longer a student attends college the more expensive higher education becomes. This often results in financial aid obligations that may require students with disabilities to obtain high wage jobs upon graduation. Research into persistence indicates students with disabilities typically take longer to finish a baccalaureate degree, up to twice as long as non-disabled students and that during their program more than 80% of the students will require support services from inside, and

outside, the educational institution (NCD, 2003). Interestingly, Wessel, Jones, and Markle (2009) call this into question, and maintain that the mean number of years to graduate for the student with a disability and a student without one are in fact quite similar. However, the preponderance of research does not currently correspond with the findings of this study.

Research in this area is incomplete and much is unknown about the economic disparity between individuals with disabilities and the nondisabled public although the benefits inherent in possessing a four year degree and the resulting increased opportunity for gainful employment are clearly supported by the literature.

Enrollment and Matriculation Trends of Students with Disabilities in Higher Education

The literature indicates that enrollment among students with disabilities in higher education is increasing. For example, enrollment of freshmen with disabilities has risen from 3% in 1978 to more than 9% in 1998 (NCD, 2003). In addition, there are growing numbers of individuals with various disabilities including hearing, speech, orthopedic, learning, health-related, sight impaired or other disability related conditions enrolling as freshman (HEATH, 1998).

The enrollment trends have been impacted by the five previously identified key historical legislative and socio-economic events discussed in the literature (GAO, 2009). Two of those trends included the Post-9/11 G.I. Bill and the wars in Iraq and Afghanistan. The Chronicle of Higher Education recently reported “At Half a Million and Counting, Veterans Cash In on Post-9/11 G.I. Bill” and this “new migration” provided

the most benefits since the 1944 G.I. Bill. Among these students are those “who struggle mightily with post-traumatic stress, fallout from traumatic brain injuries or slow healing wounds” (p. 11) due to the improvised explosive devices (IED) in the war zones.

Despite recent progress, enrollment trends vary greatly for youths and young adults with disabilities accessing and completing college (NCSPES, 2002). For example, young adults with disabilities are still less likely to enter into higher education than the nondisabled population, with only 27% electing to attend college in contrast to 68% of nondisabled students. In addition, students with disabilities who elect to pursue post-secondary schooling are less likely to choose a traditional four-year bachelor’s degree, and attend a shorter two year programs or for-profit educational/vocational institutions (NCES, 1999).

To meet the needs of the growing number of students with disabilities, a majority of public institutions (98% in 1998) provide a myriad of services, supports, and accommodations for students with disabilities leading to a matriculation of 50% (NCD, 2003). Traditionally these services, supports, and accommodations have included note-takers, readers, interpreters, lab assistants, course modification, examination modification, and physical accommodation in the classroom. Recent additions to these services include assistive computer technology, captioned videos/DVDs and document conversion (Bremmer et al., 2007).

Describing Students with Disabilities

Findings of the NCES confirm that the population of students with disabilities in the U.S. is varied and continuously changing with regard to race/ethnicity, major, gender, part-time or full-time attendance, indicating a need for accurate data in order to provide appropriate support services to students with disabilities.

Using surveys of freshman from the National Postsecondary Student Aide Study (NPSAS), the NCES (2010) provides information on specific characteristics of college students with disabilities including gender, race, attendance status, dependency status, and veteran status. Institutions may utilize this disaggregated demographic data in order to identify the needs of a student with a disability, as well as to facilitate the coordination of services to increase their likelihood of persistence and retention.

Using these data, NCES identified demographic changes of selected characteristics of students with disabilities in post-secondary institutions in 1995-96 and 2007-08 (NCES, 1997; NCES, 2009). During these years there has been an increase in the percentage of women and individuals from different race/ethnic groups among groups of students with disabilities. The data also indicate that more students with disabilities were living with parents in a dependent status in 2007-08 than in 1995-96. Additionally, during this same period the percentage of the disabled student population that is nonwhite has increased from 26.1% to 36.40%.

Types of Disabilities and ADA Implications in Higher Education

The ADA of 1990 qualifies an individual as disabled if their physical (e.g., blindness) or mental condition (e.g. depression) limits one or more life activities. In higher education, a disability must be documented and is typically classified as physical, psychiatric, hearing impaired, or learning disabled. In addition, the student must meet the same institutional standards, such as a program's academic and admission standards. These must be met by the student with or without accommodations (Americans with Disabilities Act, 1990).

Determining Eligibility for Services

The process of obtaining accommodations requires that a student seek out support services on campus. To be determined eligible for a letter of accommodation (LOA) a student must also have documentation from a medical or psychological specialist that demonstrates the individual has a disability. The student is responsible for providing the documentation to DSS for an LOA that is presented to the instructor to obtain accommodations to meet the academic requirements of the class. These accommodations are typically outlined by the office on campus that provides disability support services (Union College, 2011). There is currently a movement to create a universal design that provides for accommodation for a diverse range of barriers resulting from a student's disability.

Universal Design for Learning (UDL) ideally allows students with disabilities, and without disabilities, to access courses without adaptation. UDL should include an

educational framework allowing for learning differences but also be based on cognitive learning science. Ohio State University completed a study on UDL and concluded

Universal design is an approach to designing course instruction, materials, and content to benefit people of all learning styles without adaptation or retrofitting. Universal design provides equal access to learning, not simply equal access to information. Universal Design allows the student to control the method of accessing information while the teacher monitors the learning process and initiates any beneficial methods (The Ohio State University Partnership Grant, 2012, para. 1 and 2).

Learning Disabilities. Learning disabilities (LD) have been defined by the American Psychiatric Association (APA) and are included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, 2000). Three of the more common disorders include Attention Deficit Disorder (ADD), Attention Deficit and Hyperactivity Disorder (ADHD), and Dyslexia. The broad categorization of students with learning disabilities is very diverse and also includes students who are gifted (Reis, Neu and McGuire, 1997).

The HEATH Resource Center (1998) indicates that 35% of freshman who identified as disabled in 1996 reported a learning disorder. This indicates a 10.1% increase over the 24.9% of students who self-identified as learning disabled in 1991. Lewis and Ferris (1999) utilized a survey of 1000 higher education institutions and concluded that approximately 195,870 students self-identified as learning disabled, or about 1.34% of the national population of all college students.

Research on the LD student focuses on a variety of ways to assist students with LD including: 1) academic support; 2) student support services; or 3) transition from high school to college for these individuals. For example, there is an increased likelihood

for success for students when instructors for specific programs, such as nursing, use teaching strategies that are specifically tailored to meet the needs of the LD student (McCleary-Jones, 2008). However, a more thorough evaluation of the impact of different types of support services for LD may assist in identifying their singular strengths and weaknesses (Keim, McWhirter, and Berstein, 1996).

Additionally, there are benefits with early transition planning for college while students with L.D. are still in high school. Although students with L.D. are increasing in numbers in higher education, they are less likely to persist and successfully matriculate than their peers. This is partially the result of poor transition planning early in high school (Aune, 1991; Kosine 2007). However, even with activities such as transition planning in high school, many students with LD are at higher risk for failure in college and universities which are not required by law to provide similar academic support services. DaDeppo (2009) concluded that although enrollment of students with learning disabilities is increasing, their performances in outcomes such as graduation, grade point average (GPA), and persistence, is not as successful as the nondisabled students. He identifies high school achievement and background factors as contributors to success, but also the importance of academics and social integration of the students with LD.

Alternative approaches to the transition model to identify ways for LD students to succeed in higher education have been researched. Specifically, a cognitive model which emphasizes the importance of university success courses result in more positive academic outcomes for students with LD. These tend to focus on strategies for intervention, student

self-efficacy, and self-regulation or resourcefulness (Reed, Kennett, Lewis, Lucas, Stallberg and Newbold, 2009).

As higher education institutions seek to meet the needs of student with LD through support services, research also points to the need to encourage the students' knowledge of their own disability and to include training in self-advocacy and conflict resolution in order to increase the abilities of the student to obtain appropriate academic accommodations in the classroom (Ancil, Ishikawa, and Tao-Scott, 2008). Furthermore, in order to broaden research on students with LD in areas such as academic support, student support services and transition from high school to college, studies have also focused on specific LD disabilities such as ADHD. DuPaul, Weyandt, O'Dell and Varejao (2009) completed a comprehensive review of the literature and determined that more investigation is needed with students with ADHD, particularly with regard to treatment, to improve positive outcomes. Unfortunately, based on the results of this review, much remains unknown about students with ADHD regarding the social, psychological and neuropsychological functioning of the individual in college. The authors conclude that more empirical studies and controlled investigations are necessary to identify ways to treat and encourage success of college students with ADHD.

Orthopedic Impairments. The federal data gathering agencies for public universities, such as NPSAS, define an orthopedic impairment (OI) as an “orthopedic or mobility limitation” (NCES, 1999, p. 6). As an operational definition, this is a very broad category used to describe a diverse population of students with disabilities. An OI can

vary from mild to severe and often requires personal assistants for students to physically access classrooms in public universities.

Stumbo, Martin and Hedrick (2009) examined students with OI and determined that severe physical disabilities pose a unique challenge to higher education support services for these individuals who require around-the-clock trained personnel. They note that, “Persons with severe physical disabilities are not on a level playing field with their lesser-disabled or non-disabled counterparts when it comes to post-secondary education and competitive employment” (p. 18). One example is the need for a personal attendant for those with severe disabilities. While in high school, students may qualify for assistance from an attendant in the classroom. However, in higher education students with disabilities rely on a model of self-advocacy since most colleges do not provide students with personal assistants services. As a result of accompanying financial hardship, many students with profound disabilities resort to relying on family in order to attend higher education in their community.

There is limited research on outcomes for students with OI (Culligan, 2009; Shannon, 2003). However, one study suggests that individuals with spinal cord (orthopedic) injuries benefit economically from a college degree. Among other findings, Krause (1992) stated that higher education played a significant role in increasing the potential for employments upon graduation for students with this type of disability. Krause and Anson (1997) followed up with a another study that reiterated similar results identifying economic benefits gained due to higher educational attainment for students with spinal cord injuries.

Hearing Impairments. Based on a study funded by the Office of Special Education and Rehabilitative Services of the U.S. Department of Education (2000), 47% of postsecondary institutions in the U.S. report one or more students who are deaf or hearing-impaired (HI). Also, “of the estimated 20,040 students that institutions could identify as deaf or hard of hearing enrolled in academic year 1992-93, there were 4,520 deaf students, 7,770 hard of hearing students and 7,750 students in the combined deaf or hard of hearing (i.e., the institution did not distinguish between deaf and hard of hearing) category...” (NCES, 1994, p. 1). The Survey of Deaf and Hard of Hearing also concluded that public colleges or universities were also more likely to admit students with HI than private institutions (NCES, 1994).

The college dropout rate is higher for hearing impaired (HI) students (71%) than for students without a disability (41%) (Marschark, Lang, and Albertini 2001). Research identifies three major barriers to success for college students with HI. These barriers include feelings of isolation, reading and language deficits, and limitations with speech. Isolation was a theme in much of the research on students with HI, indicating students with HI identify their feelings of isolation in contrast to their non-disabled peers (Culligan, 2009). Brown (1991) completed a study where thirty full time students with HI were enrolled at the Rochester Institute of Technology, and succeeded academically but failed to integrate into the school with the nondisabled population. Furthermore, in a study by Foster, Long and Snell (1999) students with HI reported feeling that they were not part of the “university family” and that the faculty failed to provide appropriate

accommodation, falsely assuming that support services were being provided elsewhere in the institution.

There are additional academic barriers to success in higher education for students who are HI including reading and language deficits. Cuculick and Kelly (2003) surveyed graduates of the National Technical Institute for the Deaf to identify barriers to degree completion and concluded that “a continuing and increased commitment to reading and language instruction needs to be reemphasized” (p. 286).

Studies also indicate that the confident use of speech by HI student in the classroom indicates a greater likelihood of success in higher education. Seal (1998) concluded that schools specifically for deaf populations provide more sophisticated communication skill training. Consequently, students are more likely to succeed in higher education. Stinson, Lui, Sauer, and Long (1996) conclude that students with HI who are confident using speech will be more likely to send and receive information in the classroom than students with HI who may not be confident with their own speech.

To assist students with HI, proper accommodations are vital for their success. Marschark, et al., (2001) and Culligan (2009) identify the critical role of interpreters in providing HI students with the support they require in the classroom. They indicate that ADA requires higher education institutions to provide accommodation for students who are deaf and that interpreters are essential to meet the requirements of the law.

Psychiatric Disabilities. Under more recent federal guidelines, individuals with mental and emotional disorders have also been added an extensive list of disabilities:

This includes students who reported having a 'long lasting' condition such as blindness, deafness, or a severe vision or hearing impairment; a condition that limits one of more of the basic physical activities such as walking, climbing stairs, reaching, lifting or carrying; or who responded they had any other physical, mental, or emotional conditions that lasted 6 or more months and who had difficulty doing one of the following five activities: getting to school, getting around campus, learning, dressing or working at a job (NCES, 2006, p.1).

Higher education institutions are being challenged by an increase in the number of students who are experiencing mental health problems (Culligan, 2009; Sharpe, Johnson, Izzo, and Murray, 2005). One study identified psychiatric disorders as the disability that has the greatest increase in numbers of all the various types of disabilities (Eudaly, 2002). Indeed, studies identified a range of five percent to 12% of students reporting emotional problems serious enough to warrant psychiatric assistance (Megivern, Pellerito and Mowbray, 2003). This growth is a result of an increase in the numbers of students with psychiatric disorders utilizing vocational rehabilitation services and have also recently benefitted from further advances in psychotropic medications and legislative support through Section 504 of the Rehabilitation Act of 1973 and the ADA (Gallagher, Gill and Sysco, 2000).

Psychiatric disabilities are categorized into specific types including schizophrenia, personality disorders and mood disorders (i.e. depression, bi-polar disorders) (DSM-IV, 2000). Psychiatric disabilities result from cognitive processing problems which are typically organic in nature (i.e. schizophrenia and dementia) and can be treated with psychotropic medication. If untreated, these psychiatric disorders can greatly diminish the academic performance of the students (Brackney and Karabenick, 1995).

The American College Health Association surveyed 16,000 students from 20 colleges and determined that 10% had been clinically diagnosed with depression (Eudaly, 2002). As a result, this appears to be one of the most prevalent conditions of all the psychiatric disorders. Because depression is the most insidious of all the emotional disorders, Culligan (2009) identifies it as an increasing area for concern for many higher education institutions.

Other psychiatric disabilities are a concern as well. Belch and Marshak (2006) identified data indicating approximately 20% of the major incidents documented by campus personnel involve students suffering from a bi-polar condition. The authors further identify the need for additional training for student counselors, disability support service providers and campus police. Loewen (1993) identified medication, poor coordination among service providers, faculty disengagement and social stigma as the main reasons for students with psychiatric disabilities dropping out of college. Megivern, et al. (2003) indicates that 36% of the students in the study dropped out of college as a result of mental illness. Furthermore, 90% of those students responding to a survey maintained that they had not used mental health services on campus, many stating that they were not even aware of its availability. The authors conclude that students with psychiatric disabilities would benefit from better coordination between community mental health providers and campus student service personnel who could in turn provide psycho-education and facilitate accommodations with faculty. Kitzrow (2009) proceeds further and maintains that administrators, faculty and staff must recognize the important

role of mental health in students' success and that accommodation for psychiatric disabilities should be an institutional and educational priority in higher education.

Accommodations in Higher Education

Although the ADA requires note-takers, recording lectures, interpreters, modified formats for textbooks, tests and other materials in the class, the law also requires higher education institutions to provide reasonable accommodation in academic programming; examinations and evaluations; and housing and recreational facilities (Barnard-Brak, 2010).

However, researchers list several reasons why students with disabilities are not using accommodations entitled under ADA. Hartman (1993) explains that students often elect to utilize the services when it is too late in the semester. Norton (1997) maintains that students may be reluctant to disclose their disability and therefore never request accommodations. Lynch and Gussel (1996) suggest that the student's desire for a new identity and independence precludes them from requesting accommodation. They also point out that in contrast to their experience in primary and secondary schools, higher education institutions are not required by law to proactively identify students, and that students must elect to request the accommodation on their own.

A study utilizing a survey of students with disabilities concluded that although they were generally satisfied with academic support services "...the majority indicated that they had encountered barriers to their education, including a lack of understanding and cooperation from administrators, faculty, staff and other students; lack of adaptive aids

and other resources; and inaccessibility of building and grounds” (West, Kregel, Getzel, Zhu, Ipsen, and Martin, 1993, p. 456).

Finally, although many studies suggest that barriers to accommodations continue to be problematic for students with disabilities, one study identifies strategies for accommodations which appear to be successful for some individuals. Barnard-Brak (2010) indicates that three themes were reported by students with disabilities that were indicative of success with gaining accommodations from faculty. These included “scripting disclosure of one’s disability; negotiating accommodations with faculty; and downplaying one’s disability status” (p. 411). Therefore, although accommodations can be problematic, Barnard-Brak believes college students with disabilities can pursue a successful strategy with faculty using a specific approach that has proven successful with some individuals.

Summary

The review of the literature highlights the importance of student support services in higher education institutions for students with disabilities to increase academic success in college. However, college personnel must first know the status of the individual student with a disability and if the student requires services such as an accommodation in the classroom (Bremmer et al., 2007; NCD, 2003).

In addition, current literature identifies the unique challenges of students with diverse disabilities to accessing higher education institutions and persisting to graduation. The literature also describes the types of disabilities that challenge students who are

attempting to learn in traditional classroom. These disabilities vary widely from blindness to quadriplegia and require specific and individualized support services that are designed to meet the challenges of the various conditions (NCES, 2000).

In conclusion, the NCD (2003) states that “Researchers and practitioners in the field of disability and postsecondary education have amassed substantial data which is evident of the great strides made since legislators first recognized the rights of people with disability and also the value of their participation in and completion of post-secondary education” (p. 3). Other literature also supports the central role that data collection plays in identifying the characteristics of students with disabilities so that universities can tailor support services to meet the individual needs of the students (NCES, 2000). However, the NCD (2003) reports that “Professionals have also ascertained numerous barriers and gaps in knowledge remain (sic). In fact the knowledge gleaned from data remains vastly insufficient to the knowledge still to be found” (p. 3).

CHAPTER THREE

METHODS

The purpose of this study was to describe and analyze the trends of age, major and type of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011 and contrast them to the MSU Billings general population. Additionally, this analysis of one small university was meant to inform higher education administrators of the impact of watershed events and legislation on students with disabilities so they can plan for policy changes.

This chapter presents a detailed explanation of the methodology for the study, including a rationale for design; description of participants; instrumentation and data collection techniques; data analysis, study variables and validity and reliability of this study.

Rationale for Design

The design for this study was descriptive. The data analyzed used information collected by DSS through initial interviews with students for academic years 1999 to 2011 who self-identified as disabled in order to receive student support services during those academic years. Although this is secondary data analysis, it is a larger sample and of higher quality than could be gathered by individual research on campus (Gliner et al., 2009). The data analysis is of higher quality because there is an aggregation of data over a period of 12 years from 1999 to 2011. This results in a more representative sample of students with disabilities than could be gathered through individual research.

Participants

At the time of this study the population of MSU Billings was approximately 5000 students. The total included enrollment of undergraduate and graduate students in all colleges: Business, Technology, Arts and Sciences, Education and Allied Health Professions and the College of Technology. The participants in this study were those undergraduate students from all of the colleges who elected to disclose and document their disability in order to receive services from DSS and who identified their diagnosis as (1) attention-deficit hyperactivity disorder (ADHD); (2) deaf or hard-of-hearing; (3) a learning disability (LD); (4) a mobility impairment; (5) a psychological impairment; (6) a traumatic brain disorder (TBI); (7) a visual impairment or blindness; (8) Asperger's disorder; or (9) other. The categories were designed by DSS at MSU Billings to classify disability groups for each academic year. These categories have remained the same since the beginning of data collection in 1999. The only exception is the category of Asperger's disorder which was added in 2005. The categories of students described in this study only included those who applied for disability support services and did not include those who may have had the disability but choose not to disclose it.

On September 2010, an *Application for Human Subjects Research Approval* was submitted for a proposal to answer the question "What are the selected characteristics of students with disabilities at MSU Billings and how have they changed?" The Office of Research Compliance approved the proposal in November, 2010 (Appendix A) with the requirement that the administrator must remove the names of the students before providing the data for analysis, thus insuring confidentiality for students served at DSS.

Therefore, prior to receiving the data for this study, IT removed the student identification and replaced it with a random number used only for reference.

The raw data for this analysis were taken from the undergraduate students who were accepted for services by DSS multiple times during an academic year. As a result, the data were aggregated to insure that the participants were not counted more than once per year so that the total number of students served by DSS for each academic year is representative of the population.

The sizes of the groups for each year ranged from 191 in academic year 2008-2009, to 267 in 2010-2011. The numbers of the MSU Billings DSS subsample for each year are shown in Table 1.

The total enrollment was determined by an institutional research analyst in the Information Technology (IT) center at the university. The total included undergraduate enrollment of students in all colleges: Business, Technology, Arts and Sciences, Education and Allied Health Professions and the College of Technology. The final enrollment numbers for each semester were determined on the 15th census day of each semester. The total annual enrollment for students included spring, summer and fall semesters for all units of the university and was determined at the end of each academic year.

Table 1. Number of Unique Students Disclosing a Disability by Year.

Year	N	* N (MSUB)	Percentage of Students with Disabilities
1999-2000	205	4271	4.8%
2000-2001	224	4296	5.2%
2001-2002	197	4343	4.5%
2002-2003	192	4407	4.3%
2003-2004	204	4670	4.3%
2004-2005	195	4702	4.1%
2005-2006	181	4872	3.7%
2006-2007	194	4799	4.0%
2007-2008	189	4912	3.8%
2008-2009	191	4725	4.0%
2009-2010	212	5041	4.2%
2010-2011	267	5335	5.0%

*Includes DSS students

Instrumentation and Data Collection Techniques

The process of collecting data on students originates with an administrator of support services, or another staff member at DSS, who completes an interview with every student following their acceptance for services based on medical or mental health documentation of a disability (administrator of support services, personal communication, September 21, 2010). Once a student is accepted for services based on

documentation of a disability the interview is completed, which includes questions about the disability, age and major. Also, upon acceptance for services, the enrollment status of each individual is followed through the university computer system and DSS is provided with the number and identify of each student, for each semester. This insures an accurate ongoing count of the students with specific types of disability,

Prior to the interview and receiving services, students are required to obtain verification of the physical and/or mental disability by a designated licensed professional who describes the condition (Appendix B). The interview process includes gathering information regarding age, major and type of disability which is specifically listed on the 'Student Data Input Form'. As a student changes from one major, or age group, to another, it is also reflected in their current status through the university computer system, which updates the data each semester.

An administrator of support services stated that the type of disability students use to self-identify are based on categories that DSS created and have remained the same from 1999 to 2011 (administrator of support services, personal communication, September 21, 2010). The one exception is Asperger's Syndrome which first appeared as category in 2005-2006 and continues to be included as a category. This information is entered into the computerized campus data gathering support system called 'Banner' which is managed by Institutional Technology (IT) at MSU Billings and reported in Excel format.

Data Analysis

Since this study was descriptive and did not have an experimental design that requires manipulation of data over time, it analyzed ‘study variables’ rather than ‘independent variables. These variables were measured as nominal data which included age (three categories), major (six categories) and type of disability (nine categories) for the academic years starting in AY 1999-2000 through AY 2010-2011. Specifically, they included the following:

- Age (18-24, 25-39, 40 and older).
- Major by college, including (1) General Education, (2) College of Business, (3) College of Technology, (4) College of Arts and Sciences, (5) College of Education, and (6) College of Allied Health Professions.
- Types of disability based on DSS categories, including (1) attention-deficit hyperactivity disorder (ADHD); (2) deaf or hard-of-hearing; (3) learning disabled (LD); (4) mobility impaired; (5) psychologically impaired; (6) traumatic brain disorder (TBI); (7) visual impairment or blindness; (8) Asperger’s disorder (beginning in 2005); (9) or other (any disability with no category such as Diabetes).

Two approaches were used for the data analyses. The first approach to data analysis was guided by the first two research questions, and the second approach to data analysis was guided by the third research question.

First Approach to Data Analysis

The first approach to data analysis was guided by the first two research questions:

- 1) How have the characteristics of age, major and type of disability of the Disability Support Services (DSS) subsample changed from 1999 to 2011?
- 2) How have the characteristics of age, major and type of disability of the DSS subsample changed compared to the general MSU Billings population from 1999 to 2011?

To answer these questions, a descriptive approach was employed utilizing tables to provide an overall view of the changes among the study variables of age, major and type of disabilities from 1999 to 2011. Age was described using a table listing percentages of students with types of disabilities in three groups (18-24, 25-39, 40 and older) for each academic year. Major by college was described using percentages of students with disabilities in each college. Types of disabilities were described using the percentage of MSU Billings students in each DSS category for each academic year.

Initially this analysis was designed to utilize a simple Best Fit Line (Binary Regression) statistic to determine whether the trends of the study variables of age groups and types of disabilities at DSS had changed over time (Gravetter and Wallnau, 2007). It included calculating the percentage of students at MSU Billings for each age group and within each category of disability from 1999 to 2011, and then utilizing the Best Fit statistic to test to see if this percentage had changed significantly over time.

However, the Best Fit Line is only appropriate when there is a linear relationship between variables. The data structures that were analyzed resulted in being more

curvilinear than anticipated. This causes the parameter estimates (R values) to be unstable and unreliable. A best fit analysis for curvilinear data was considered. It was not used because even though the approach may allow for a statistical analysis of the rise and fall of data over time, it would not account for the substantive interpretation of the data inflections. In other words, the curvilinear best fit line would simply be an effort to try and fit a line through the rise and fall of the study variables. Therefore, the analysis did not rely on a Best Fit Line to determine trends (see Appendix C) as originally stated in the methods for data analysis.

Second Approach to Data Analysis

The second approach to data analysis was guided by the third research question: How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011?

The five watershed legislative events that occurred during the period that coincides with the years of this study include (1) No Child Left Behind Act of 2001; (2) The Higher Education Opportunity Act of 2008 (HEOA); (3) the Americans with Disabilities Amendment Act (2008); (4) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill); and (5) veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present).

An analysis of the relationship of these watershed events to the DSS subsample was explored, describing how the events coincided with minimum and maximum inflections of trends by types of disabilities from 1999 to 2011. The goal was to contextualize the impact of the watershed events on one small university and highlight

the need for policy considerations for students with diverse types disabilities based on social, economic, and political forces during the period studied (GAO, 2009). To that end, figures were used to describe the trends for cognitive and physical disabilities, and watershed legislative and historical events were included with the data to analyze these events' impact on students with disabilities during the period of this study. Furthermore, this analysis contrasted the local trends for types of disabilities for the DSS subsample to the national trends of types of disabilities.

Study Variables

The population for this study was the students enrolled at MSU Billings for each year (1999-2011). The sample was those students with disabilities from the population for each year during the twelve years of data. Additionally, age, major and each of nine categories of disabilities represented a subsample of the sample for each year (1999-2011). The following is a description of the subsamples:

Students Enrolled in DSS by Age Groups. Students enrolled in DSS were analyzed according to three age groups (similar to NCES), 18- 24, 25-39, and 40 and above, by determining the percentages of each group within the total of DSS students served for each academic year. The percentages that have fluctuated over the period 1999 to 2011 were also presented in a table.

Percentages of Students with Disabilities in Majors by College. An analysis of DSS students and their majors was also conducted to determine the percent of students with specific types of disabilities within each college. A table was utilized to provide a

visual representation of the percentages of students with disabilities within each college for each academic year.

Types of Disabilities. The variables of types of disabilities were analyzed by determining the percentage of students with a diagnosed disability (nine categories) within the total population of MSU Billings from 1999 to 2011. These types of disabilities were described using tables to describe the aggregate growth, or decline, in the number of students within each category, and also graphs to provide insight into trends over time. As part of the analysis, the years of the five watershed events that have impacted students with disabilities in higher education are included in the graphs.

Validity and Reliability

Based on preliminary data obtained from DSS, there has been a range of 181 to 267 students who have applied for services during academic years 1999 to 2011, which provided a large enough sample to justify a descriptive analysis since it was greater than 30. Therefore, this study described the trends of age, major and type of disabilities over time since there are a sufficient number of participants to draw quantifiable conclusions. (Gliner, et al., 2009). In addition, there are currently no limits to the actual number of students with disabilities that can be served at MSU Billings, although all students must provide the necessary documentation to be accepted to receive services. An administrator of support services stated that “We do not have a limit [to the number we can accept]. If a student has a disability for which an accommodation is appropriate, we will work with

them. That is a federal guideline” (administrator of support services, personal communication, March 5, 2012).

The study embodied ecological external validity as defined by Gliner, et.al, (2009) since the data analyzed were collected in natural conditions and “the results can be generalized to real-life outcomes” (p. 129). The ‘natural conditions’ existed since the data were not gathered from a laboratory but through a real-life interview process during which students reported their status because they required accommodation services. Furthermore, the population for this study included students enrolled at MSU Billings for each year (1999-2011), and the sample was those students with disabilities from the population for each year during the twelve years of data. This allowed for making inferences about the population of students at MSU-Billings with disabilities based on a comparison with the total MSUB population. This also allowed for analyzing trends based on the relative proportion of individuals for a point in time and over time with a particular disability.

Because the same interview instrument and criteria for acceptance have remained consistent since data collection began in the academic year 1999-2000, the data gathered can be considered as reliable, although Asperger’s disorder was added as a category in 2005. However, there may be confounding variables to the external reliability and generalization with this study when attempting to compare the students of MSU Billings with other campuses around the state. One reason for this is that higher education institutions may use their own unique determination process for accepting students with disabilities for support services. The Virginia Higher Education Leadership Partners

(2007) referenced a national study to conclude that “In higher education, there are no consistent or agreed upon principles related to interpretation of information to determine student eligibility, access to services, and appropriate accommodations” (p. 12).

Therefore, comparisons among institutions may be problematic because categories for describing disabilities may vary from campus to campus.

There are five threats to the validity of this study based on the assumption that the data of students served by DSS reflect the population of all students with disabilities at MSU Billings. The four confounding variables include: 1) students who are reluctant to apply for services but have a disability; 2) students who are not aware they have a disability and do not use services; 3) students facing an economic barrier to obtaining documentation for services; 4) students identifying themselves as having multiple disabilities; and 5) the cross-sectional data in this study.

The first threat to validity is the student who may be reluctant to admit they have a disability that requires accommodation. An administrator of support services identifies this as “...pride, which makes students want to distance themselves from ‘special ed’ kinds of services” (administrator of support services, personal communication, March 5, 2012)

The second threat to validity is the student who is not aware they have a disability. Since these individuals did not get diagnosed with a disability while in K-12 they may not be cognizant of their disability. An administrator of support services indicated that “this includes the group of people who drop out of [college] because they

are poor students and don't realize that their scholastic problems might stem from a disability" (administrator of support services, personal communication, March 5, 2012).

The third threat to validity is the student who experiences an economic barrier to accessing the documentation necessary to receive services and elects not to attend MSU Billings. An administrator of support services indicated that for non-traditional students who did not get diagnosed in K-12, a psychological evaluation is "around \$2400" and it "absolutely" can impact the population of those students served by DSS at MSU Billings (administrator of support services, personal communication, March 5, 2012). This observation indicates that those students who are served by DSS may not reflect those who are in need of accommodations.

The literature supports the Director's concern that DSS may provide services to only a fraction of those students who could benefit from accommodations. One national study concluded that because of the disconnect between secondary, postsecondary, and community service systems, students with disabilities and their families too often face financial burdens and barriers to access postsecondary education as a result of not having available resources to pay privately for the required evaluations (National Joint Committee on Learning Disabilities, 2007).

The fourth threat to the internal validity in this study results from a request in the initial interview for the student to describe their disability. Several students identified more than one disabling condition. An example of this is a student who elects to identify their disability as both learning disabled (LD) and attention-deficit hyperactivity disorder

(ADHD). To address this, aggregated data will include both disabilities which will result in more disabilities than students.

The fifth threat to the internal validity is the unique students in this study. This results from the fact that each year may or may not have the same students represented. For example, some students may graduate or leave the university. However, some students will be represented in multiple years. So, the concern is that the individual years do not represent something similar to a panel study, where the students remain the same. Also there is a concern that over time this is not a unique sample of the population, since the different samples do not represent an independent observation.

The last threat to the internal validity of this study results from data being gathered from only a cross-section of students with disabilities. Since there is no longitudinal data it limits the study to being a ‘snapshot’ of these students who were accepted by DDS for services.

Summary

The purpose of this quantitative and descriptive study was to provide administrators and faculty at MSU Billings with current information about the selected characteristics of students with disabilities. Analysis included a description of the selected characteristics of age, major and type of disabilities of students accepted for services at DSS at MSU Billings from 1999 to 2011. The data was aggregated by variables and reported through the application of descriptive statistics.

CHAPTER FOUR

RESULTS

Introduction

The problem addressed in this study was that administrators and faculty at MSU Billings needed a description and analysis of the trends of age, major, and type of disabilities for those students who received services through Disability Support Services from 1999 to 2011. The descriptive data obtained from DSS at MSU Billings for this research was nominal and included the following categories:

- Age (18-25, 26-35, 36 and older).
- Major by College (General Education, Business, Technology, Arts and Sciences, Education and Allied Health Professions),
- Types of disability (physical/orthopedic impairment, sensory impairment, psychiatric impairment and cognitive impairment).

The purpose of this study was to describe and analyze the trends of age, major and types of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011 and contrast them to the MSU Billings general population. Additionally, this analysis of one small university was meant to inform higher education administrators of the impact of watershed events and legislation on students with disabilities so they can plan for policy changes.

There were three research questions for this study:

- 1) How have the characteristics of age, major and type of disability of the Disability Support Services (DSS) subsample changed from 1999 to 2011?
- 2) How have the characteristics of age, major and type of disability of the DSS subsample changed compared to the general MSU Billings population from 1999 to 2011?
- 3) How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011?

Chapter four presents the results of the data analyses to assist faculty, administrators and support service providers to provide additional evidence-based practices and policies to students with disabilities at the university. Two approaches were used for the data analyses; therefore, in chapter four the results of the data analysis were divided into two sections and analyzed separately.

The first approach to data analysis was guided by the first two research questions. To answer these questions, a descriptive approach was employed utilizing tables to provide an overall view of the changes among the study variables of age, major and type of disabilities from 1999 to 2011. Age was described using a table listing percentages of students with types of disabilities in three groups (18-24, 25-39, 40 and older) for each academic year. Major by college was described using percentages of students with disabilities in each college. Types of disabilities were described using the percentage of MSU Billings students in each DSS category for each academic year. Finally, an analysis was completed comparing the proportional growth of the overall population of MSU Billings students with the DSS subsample from 1999 to 2011.

The second approach to data analysis was guided by the third research question: How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011? The five watershed legislative events that occurred during the period that coincides with the years of this study include (1) No Child Left Behind Act of 2001; (2) The Higher Education Opportunity Act of 2008 (HEOA); (3) the Americans with Disabilities Amendment Act (2008); (4) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill); and (5) veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present).

An analysis of the relationship of these watershed events to the DSS subsample was explored, describing how the events coincided with minimum and maximum inflections of trends by types of disabilities from 1999 to 2011. The goal was to contextualize the impact of the watershed events on one small university and highlight the need for policy considerations for students with diverse types disabilities based on social, economic, and political forces during the period studied (GAO, 2009). To that end, figures were used to describe the trends for cognitive and physical disabilities, and watershed legislative and historical events were included with the data to analyze these events' impact on students with disabilities during the period of this study. Furthermore, the analysis contrasted the local trends for types of disabilities for the DSS subsample to the national trends of types of disabilities.

Approach 1: Descriptive Analyses of Students with Disabilities:
Age Groups, Major/Colleges, and Types of Disabilities

The descriptive analysis for Approach 1 provided an overall view of the changes among the study variables from 1999 to 2011. These descriptions are presented in tables and figures and include (1) the percentage of students served by DSS by three age groups for each year (Table 2); (2) the percentages of students with disabilities in majors by college (Figures 2-7); and (3) the numbers of student utilizing DSS by type of disability based on the categories of cognitive disabilities and physical disabilities (Tables 3, 4 and 5). Following the descriptions of age, majors and types of disabilities is a summary of all analyses, with summary tables.

Students Served in DSS by Age Groups

Students served in DSS were analyzed according to three age groups, 18- 24, 25-39, and 40 and above, by determining the percentages of each group within the total of DSS students served for each academic year. The percentage of each of the three groups has fluctuated over the period 1999 to 2011 (see Table 2). One example of the fluctuation is the 40 + group, which was 12% of the DSS population in 1999, but grew to 30% in 2006, only to drop again to 18% in 2010. The other two groups also had a broad range of variation. The 18-24 age group ranging from 36% to 47% and the age group 25 -39 ranging from 28% to 41%. The largest fluctuation was in the age 40+ group ranging from 12% to 31%.

In addition, students with disabilities in these three age groups were compared with the total population of MSU Billings. When comparing the proportions of age

groups among students with disabilities and total students at MSU Billings from 1999-2011 it was clear that nontraditional age students generally constituted a greater percentage of students in the 25-39 and 40+ groups than the total population (see Table 2).

Table 2. Percentage of Age Groups of Students with Disabilities and Total Students at MSUB by Year

Year	18-24	MSUB population of age group	25-39	MSUB population of age group	40 +	MSUB population of age group
99-00	47%	n.d.*	41%	n.d.*	12%	n.d.*
00-01	38%	n.d.*	40%	n.d.*	22%	n.d.*
01-02	36%	n.d.*	40%	n.d.*	24%	n.d.*
02-03	36%	59%	35%	27%	29%	14%
03-04	41%	58%	28%	28%	31%	14%
04-05	40%	58%	32%	29%	28%	13%
05-06	37%	60%	38%	29%	25%	11%
06-07	38%	59%	32%	30%	30%	11%
07-08	38%	60%	38%	30%	24%	10%
08-09	38%	59%	36%	31%	26%	10%
09-10	41%	57%	40%	32%	19%	10%
10-11	42%	57%	40%	33%	18%	10%

*No data exist from MSU Billings

Percentages of Students with Disabilities in Majors by College

An analysis of DSS students and their majors was conducted to determine the percent of students with specific types of disabilities within each college. Figures 2 to 7 include the percentages of students with disabilities within each college for each academic year from 1999-2011.

There are five colleges offering undergraduate and graduate degrees in the university, including the College of Arts and Sciences with 1562 students in 2010, which includes majors in the sciences, mathematics, social sciences and the arts. The College of Education with 700 students in 2010 includes majors leading to licensure in K-12 teaching, such as elementary and special education, as well as graduate programs. The College of Allied Health Professions with 594 students in 2010, which was established in 2004, offers degrees in human services, health professions, and rehabilitation. The College of Business with 673 students in 2010, offers degrees in programs such as management, accounting, and economics, while the College of Technology with 1391 students in 2010, offers degrees and certificates in vocational specialties, such as mechanics, power plant technology, and practical nursing.

The results of the data analysis describe the proportion of students with specific types of disabilities by college per year using percentages and revealed fluctuations within some majors during the academic years 1999 to 2010. One example was business majors with disabilities, which consisted of 25 students (3.36%) in the college population in 1999, but only 13 students (1.88%) of the population in 2008 (see Figure 3). Another example is students with disabilities in the College of Technology which

included 94 students (6.13%) of the college population in 2010, but only 21 students (2.02) in 2005 (see Figure 4). The data revealed that the percentage of students with disabilities within most of the colleges at MSU Billings had both increases and decreases. In addition, the data revealed that the number of students with disabilities with specific majors within colleges did not correspond to the size of the college. For example, although the College of Technology and the College of Arts and Sciences were roughly twice the size of the other colleges, they did not have a proportionally larger percentage of students with disabilities (see Figures 4 and 5). For example, although in 2010 the percentage of MSU Billings in the College of Technology was 29%, only 3.7% of students reported disabilities. This is in contrast to the College of Allied Health with 11% of the enrollment of MSU Billings, with 6.4% of the students reporting disabilities.

The following figures (2-7) show the percentage of total populations of students at MSU Billings in each major/college, as well as the percentage of students with disabilities within each major/college. Two minor points of clarification are necessary to understand the data in Figure 2. General Education (532 students in 2010-11), was a category used by Disability Support Services (DSS) to identify students who had not yet declared a major and were identified accordingly in Figure 2. In addition, in 2004 several of the majors from the College of Education (including Human Services, Rehabilitation and Physical Education) were moved to the newly created College of Allied Health Professions. As a result, the College of Education experienced a decrease in students with disabilities in 2003-04 from 5.35% to 3.17% in 2004 -05 (see Figure 6).

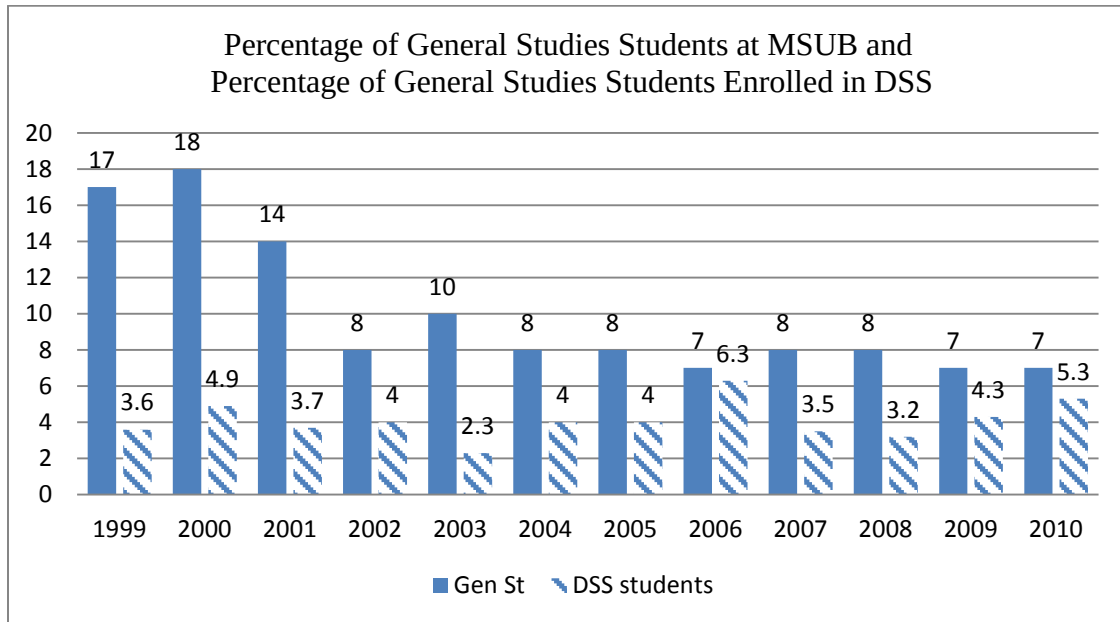


Figure 2. Percentage of General Studies Students at MSUB and Percentage of General Studies Students Enrolled in DSS

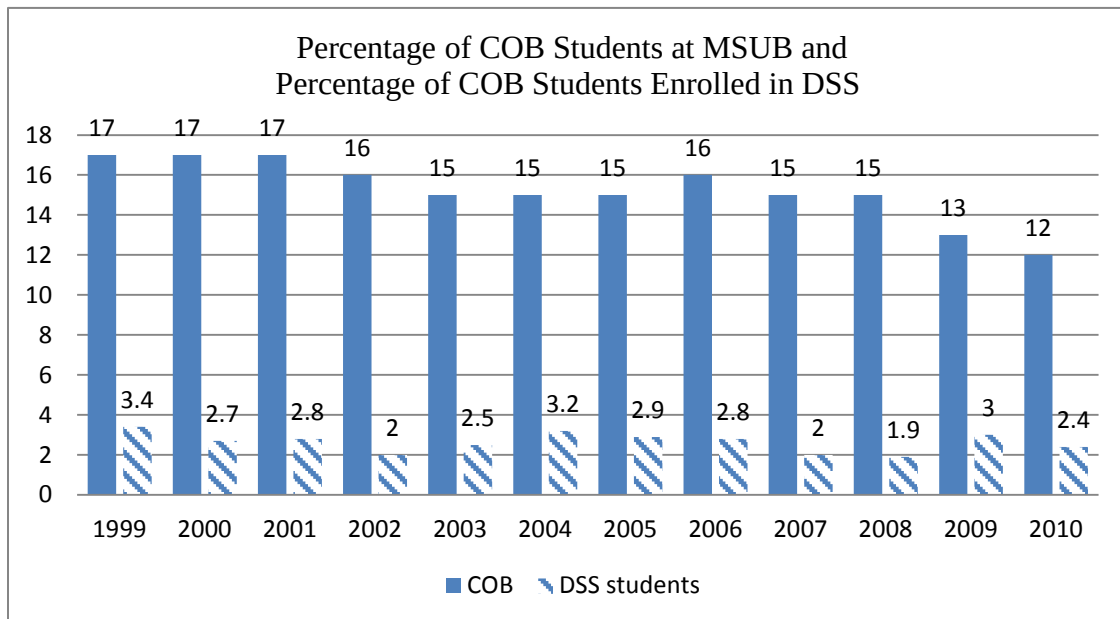


Figure 3. Percentage of College of Business Students at MSUB and Percentage of College of Business Students Enrolled in DSS

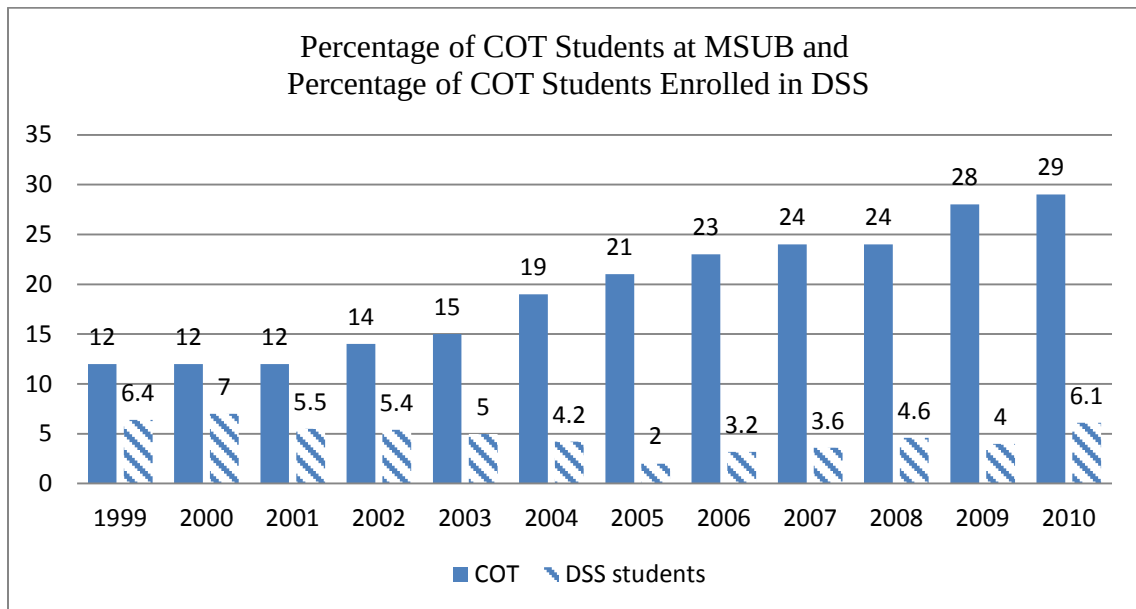


Figure 4. Percentage of College of Technology Students at MSUB and Percentage of College of Technology Students Enrolled in DSS

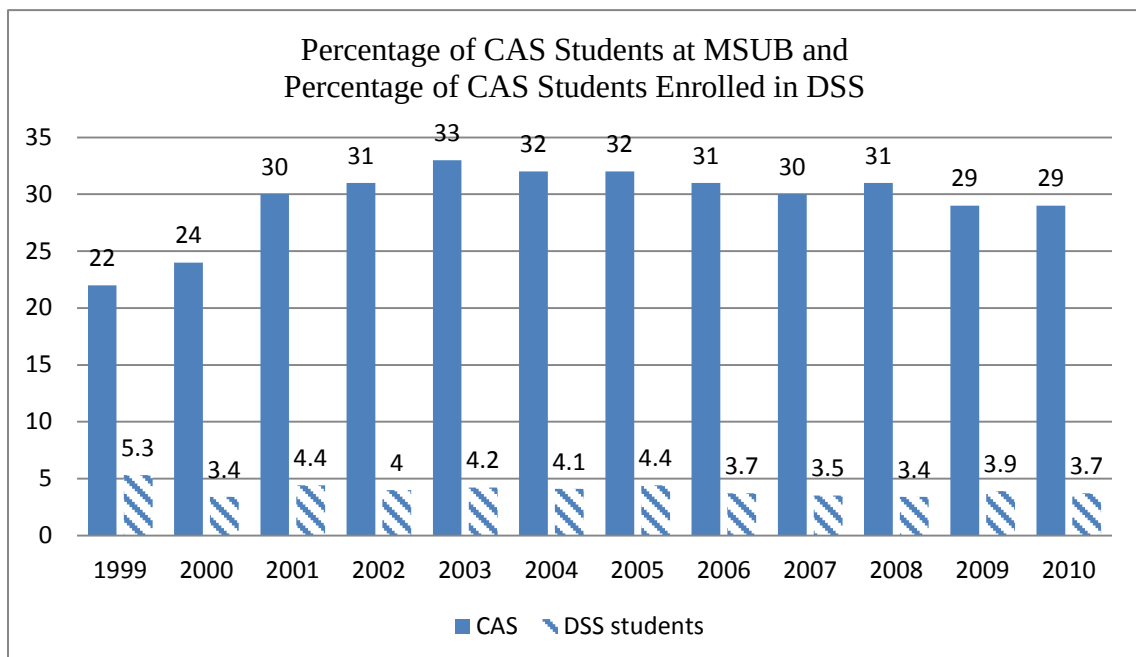


Figure 5. Percentage of College of Arts and Sciences Students at MSUB and Percentage of College of Arts and Sciences Students Enrolled in DSS

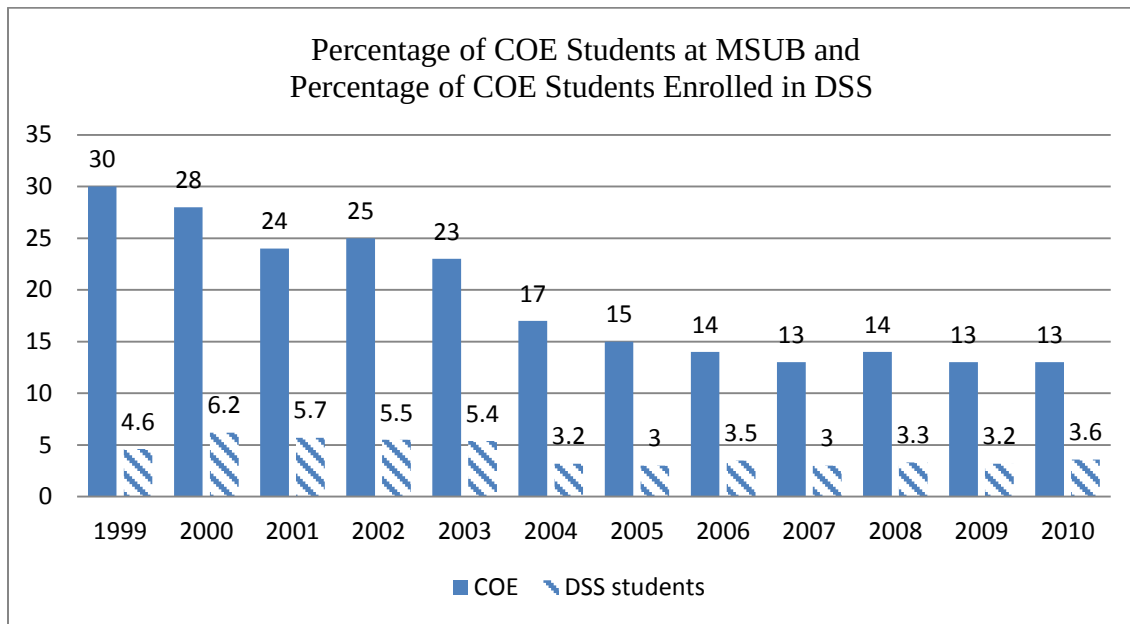


Figure 6. Percentage of College of Education Students at MSUB and Percentage of College of Education Students Enrolled in DSS

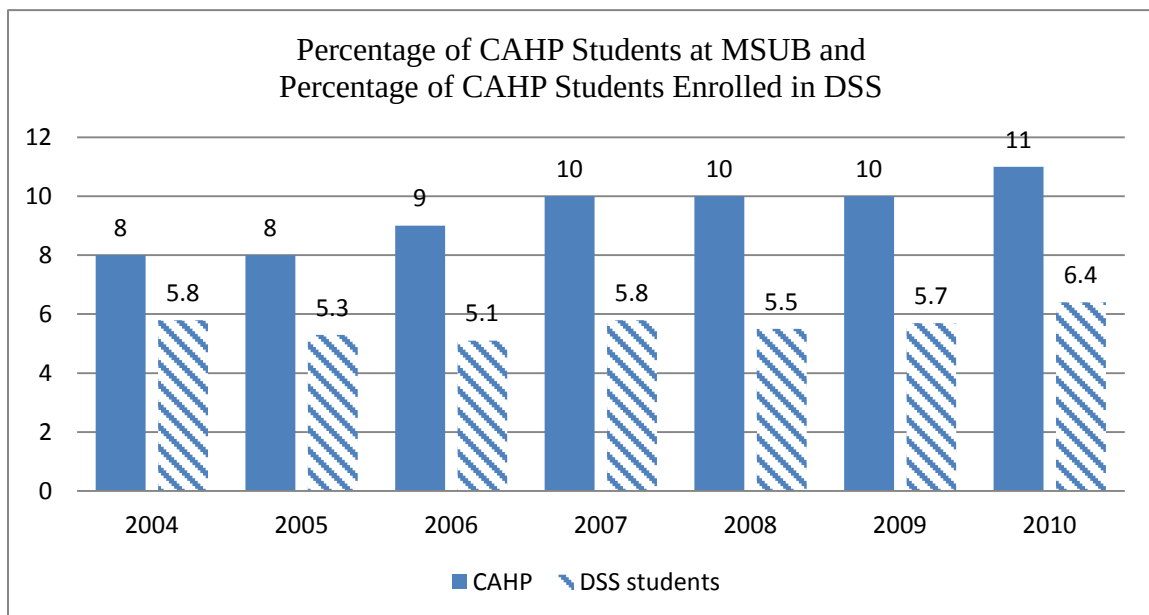


Figure 7. Percentage of College of Allied Health Professions Students at MSUB and Percentage of College of Allied Health Professions Students Enrolled in DSS

Description of Types of Disabilities of Students

The descriptions of the total numbers of students who identified themselves as having specific disabilities from 1999 to 2011 can be viewed in three tables, which organize the students into two distinct categories to better describe them as sub-variables. The first (see Table 3) describes the numbers of students with cognitive disabilities (ADHD, TBI, Asperger's, LD and Psychological Impairments. The second (see Table 4) describes the number of student with physical disabilities (Hearing Impairments, Mobility Impairments, Visual Impairments and Other Disabilities). The third table describes the percentage of changes in each category from 1999-2011 (see Table 5).

These types of disabilities are based on categories developed by Disability Support Services (DSS) at MSU Billings including (1) attention-deficit hyperactivity disorder (ADHD); (2) deaf or hard-of-hearing; (3) learning disabled (LD); (4) mobility impaired; (5) psychologically impaired; (6) traumatic brain disorder (TBI); (7) visual impairment or blindness; (8) Asperger's disorder (beginning in 2005); and (9) all other disabilities not included in the DSS designated categories. These categories are determined by disability supports services at MSU Billings.

It is important to note that from 1999 to 2011, there was an increase in the numbers of students in all the types of disabilities used by DSS as categories with the exception of one type of disability. The number of students served by DSS with mobility impairment actually decreased during this period.

Description of Students' Cognitive Impairments

Attention-Deficit Hyperactivity Disorder (ADHD). The total number of students with ADHD increased from 50 in 1999-2000 to 81 in 2010-2011. In addition, these numbers also represent the low and high variations in numbers over the same time period (see Table 3). The number of students served by DSS in the category of ADHD increased by 31, or 62%, from 1999 to 2011. These results reveal a total increase in number of students with ADHD who were using DSS services from 1999 to 2011(see Table 5).

Traumatic Brain Injury (TBI). The number of students diagnosed with TBI increased from 26 in 1999 to 35 in 2010 with variations throughout the time period. The fluctuations ranged from a low of 15 in 2007-2008 to a high of 35 in 2010-2011 (See Table 3). The total number of students served by DSS in the TBI category increased by nine, or 35% during the study period. The results reveal a growth in the total number of students with this type of disability who used DSS services from 1999 to 2011 (see Table 5).

Asperger's Syndrome. The number of students diagnosed with Asperger's Syndrome at DSS increased from 1 in 2006-2007 to 11 in 2010-2011, with variation in annual numbers occurring over this time period. The fluctuations ranged from a low of 1 in 2006-2007 to a high of 11 in 2010-2011 (See Table 3). The number of total students served by DSS in the Asperger's Syndrome category increased by 10 times and the

results of this analysis reveal a substantial increase in the total number of students with this disability served by DSS from 1999 to 2011 (see Table 5).

Learning Disabilities (LD). The numbers of students at MSU Billings diagnosed with LD, and accepted for services at DSS increased from 127 in 1999-2000 to 137 in 2010-2011. The fluctuations ranged from a low of 103 in 2001-2002 to a high of 137 in 2010-2011 (see Table 3). The total number of total students served by DSS in the LD category during this time period increased by 10, or eight percent. This shows an increase in the total number of students with LD who utilized DSS services from 1999 to 2011 (see Table 5).

Psychological-Related Disabilities. The number of MSU Billings students with psychological-related disabilities and receiving services at DSS increased from 79 in 1999-2000 to 122 in 2010-2011 with a variation in annual numbers occurring over this time period (see Table 3). The fluctuations ranged from a low of 67 in 2005-2006 to a high of 122 in 2010-2011. The number of total students served by DSS in the psychological impairment category increased by 43, or 54 % from 1999 to 2011. These results reveal an increase in number of students with psychological-related disabilities using DSS services from 1999 to 2011 (see Table 5).

Table 3. Numbers of Students with Cognitive Disabilities served by DSS by Year

Year	ADHD	TBI	Asperger's	LD	Psych Imp	MSUB Population
99-00	50	26	nd*	127	79	4271
00-01	64	22	nd*	122	92	4296
01-02	61	19	nd*	103	88	4343
02-03	51	25	nd*	115	87	4407
03-04	66	25	nd*	135	78	4670
04-05	62	25	nd*	126	86	4702
05-06	53	18	1	118	67	4872
06-07	57	17	3	118	70	4799
07-08	68	15	3	125	72	4912
08-09	74	16	3	107	72	4725
09-10	77	33	3	132	93	5041
10-11	81	35	11	137	122	5335

*No data exist from MSU Billings

Description of the Number of Students' Physical Disabilities

Deaf and Hard of Hearing. The number of students in the category of deafness or hard-of-hearing disability increased from 13 in 1999-2000 to 28 in 2010-2011 with variations throughout the time period. The fluctuations ranged from a low of 8 in 2000-2001 to a high of 28 in 2010-2011. (See Table 4) The total number of total students

service by DSS in the Deaf and Hard of Hearing category increased by 15 or 115% from 1999 to 2011. These results demonstrate a growth in the total number of students with hearing impairments who utilized DSS services from 1999 to 2011(see Table 5).

Mobility-Related Disabilities. Mobility related disabilities constituted the only category of disability that declined in numbers during the time period of this study. The number of MSU Billings students at DSS diagnosed with mobility impairments decreased from 94 in 1999-2000 to 75 in 2010-2011 with slight variations throughout the time period. The fluctuations ranged from a high of 97 in 2002-2003 to a low of 51 in 2008-2009 (See Table 4). Thus, the number of students served by DSS in the mobility-related disabilities category decreased by 19 or 20% during this time period. The results reveal a declining number of students with this type of disability using DSS services from 1999 to 2011 (see Table 5).

Visual Impairments. The number of students at MSU Billings diagnosed with blindness or visual impairments increased from 10 in 1999 to 18 in 2010 with variations throughout the time period. The fluctuations ranged from a low of 10 in 1999-2000 to a high of 22 in 2009-2010 (See Table 4). The number of total students served by DSS in the visual impairments category increased by 8 students, or 80%. The results show there was an increased number of students with visual impairments who enrolled with DSS services from 1999 to 2011(see Table 5).

All Other Disabilities. The number of students at DSS diagnosed with all other disabilities increased from 53 in 1999 to 61 in 2010 with variations during the time

period. The fluctuations ranged from a low of 31 in 2003-2004 and 2006-2007 to a high of 66 in 2009-2010 (See Table 4). The number of total students served by DSS in this category increased by 8, or 15%, during the study period. The results show an total increase in the number of students in a broad and non-specific category of disability using DSS services from 1999 to 2011(see Table 5).

Table 4. Numbers of Students with Physical Disabilities Served by DSS by Year

Year	Hearing Impairments	Mobility Impairments	Visual Impairments	Other Disabilities	MSUB Total Population
99-00	13	94	10	53	4271
00-01	8	90	20	51	4286
01-02	9	83	17	44	4343
02-03	16	97	18	35	4407
03-04	20	79	16	31	4670
04-05	24	85	16	37	4702
05-06	22	81	16	40	4872
06-07	19	71	20	31	4799
07-08	19	62	20	39	4912
08-09	27	51	20	55	4725
09-10	27	58	22	66	5041
10-11	28	75	18	61	5325

Table 5. Number and Percentage of DSS Students with Types of Disabilities.

Disability	1999	2011	Difference	Percent
	N	N		
*Asperger's (2005)	1	11	10	1000%
Deaf/Hearing	13	28	15	115%
Visual	10	18	8	80%
ADHD	50	81	31	62%
Psychological	79	122	43	54%
TBI	26	35	9	35%
Mobility	94	75	(19)	(20%)
Other Disabilities	53	61	8	15%
LD	127	137	10	8%

*established as a category in 2005 (N=1)

Comparison of Proportional Growth of MSU Billings Populations and DSS Subsample in 1999 and 2011

An analysis was completed comparing the proportional growth of the overall population of MSU Billings students with the DSS subsample from 1999 to 2011.

Rationale for Inclusion of Data. In order to describe and contextualize the change in numbers and percentages of students with disabilities from 1999 to 2011, a summary of the data analysis on the number and percentages of students served by at DSS and enrolled at MSU Billings during the period 1999 to 2011 is included. The results in Table

2 indicate that students served by DSS grew at a greater rate (30%) than MSU Billings (25%) over the same period. In order to determine if there was a statistically significant difference in growth of the subsamples, a Difference in Proportions Test (Answers Research, 2012) was completed. The difference was not statistically significant at the 95% confidence level indicating the growth for the comparable groups were similar in 1999 and 2011 (see Table 6)

Table 6. MSU B and DSS Student Population Comparison for 1999-2011

	1999	2011			
	N	N	Difference	Percentage Increase	Proportion
¹ MSU Billings	4278	5335	1057	24.7%	4.2 ²
DSS	205	267	62	30.0%	5.2 ²

¹ includes DSS students

² not significant at the .05% level

Summary of the Results of Approach 1

The following section includes a summary of the results of the first approach used for analyses of students with disabilities for the study variables of age groups, major/colleges, and types of disabilities. Also included is a summary of the data (Table 7) on the growth in enrollment of DSS and MSU Billings during the period of this study.

Students with Disabilities by Age Groups

A summary of the results using data on three different age groups served by DSS reveal that the percentage of each of the three groups has fluctuated over the period 1999

to 2011 (see Table 7). The largest fluctuation was in the 40 + group. This group constituted 12% of the DSS population in 1999, and increased to 31% in 2003-04 only to drop to 18% in 2010. However, over time, the actual changes in proportion of age groups with students from 1999 to 2011 changed minimally.

Table 7. Changes in Proportion of Age Groups among Students with Disabilities from 1999-2011

Age Group	1999 Percentage	2011 Percentage	Difference over time
18-24	2.24	2.1	.14
25-39	2	2	none
40+	.06	.09	.03

In addition, students with disabilities in these three age groups were compared with the total population of MSU Billings. When contrasting the proportions of age groups among students with disabilities and total students at MSU Billings from 1999-2011 it is evident that non-traditional age students generally constitute a greater percentage of students in the 25-39 and 40+ groups than the total population. Non-traditional students have been described as aged twenty-five or older (Aslanian, 2002). Furthermore, when comparing the proportions of age groups among students with disabilities and total students at MSU Billings from 1999-2011 it is clear that nontraditional age students with disabilities generally constitute a greater percentage of students in the 25-39 and 40+ groups than the total population of MSU Billings.

Students with Disabilities by College/Major

An analysis of DSS students and their majors was conducted to determine the percent of the total students within each college. Large fluctuations in the number of students with disabilities within some majors during the academic years 1999 to 2011 were identified in the data analysis. Two examples include business majors with disabilities who totaled 25 students (3.36% of the university population) in 1999, but only 13 students (1.88% of the population) in 2008 and students with majors in College of Technology who totaled 94 students (6.13% of the college population) in 2010, but only 21 students (2.02% the population) in 2005.

Students with Disabilities by Types of Disabilities

A summary of the data analysis on the number and percentages of students at DSS reveal that there was a total increase in almost all of the types of disability categories from the period 1999 to 2011. However, just comparing two years (1999 and 2011) does not necessarily constitute an increasing trend with these categories. Therefore the next section reports the analyses of trends for age and types of disability students with disabilities using historical events as possible explanations for the increase or decrease in numbers. This allowed the researcher to find go beyond just comparing 1999 to 2011 and find meaningful data despite all the different fluctuations in data over the course of twelve years.

Additionally, an analysis was completed comparing the proportional growth of the overall population of MSU Billings students with the DSS subsample from 1999 to 2011. The results indicated that students served by DSS grew at a greater rate (30%) than

MSU Billings (25%) over the same period. However, a Difference in Proportions Test was completed to determine if there was a statistically significant difference in growth. (Answers Research, 2012). The difference was not statistically significant at the 95% confidence level indicating the growth for the comparable groups were similar in 1999 and 2011.

Approach 2: Analysis of Trends for Students with Disabilities:
Age Group and Types of Disability by Historical Events

The second approach to data analysis was guided by the third research question: How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011? These patterns were explored by analyzing how the characteristics of age and type of disability of the DSS subsample have changed locally in comparison to national changes as a result of legislative events. The analysis was separated into three sections which include the following:

- 1) Trends for students served by DSS by age group and significant historical events from 1999 to 2011.
- 2) Trends for students utilizing DSS by type of disability and significant historical events from 1999 to 2011.
- 3) Discussion of the meaning of the local and national trends and how these watershed events have impacted, and will continue to impact, policy decisions in higher education.

The goal of the second approach was to go beyond a simple description of students with disabilities and to contextualize the impact of the watershed events on one

small university and highlight the need for policy considerations for students with diverse types disabilities based on social, economic, and political forces during the period studied (GAO, 2009). To that end, figures were used to describe the trends for cognitive and physical disabilities, and watershed legislative and historical events were included with the data to analyze these events' impact on students with disabilities. Furthermore, this analysis contrasted the local trends for types of disabilities for the DSS subsample to the national trends of types of disabilities.

Trends for Students Served by DSS by Age Group and Significant Historical Events

The analysis for trends in age group included calculating the percentage of students at MSU Billings who used DSS for each age group and within each category of disability from 1999 to 2011. Upon examination of Figures 8 to 10 there is no evidence of a trend in ages of students with disabilities at MSU Billings, based on the historical events included in the analysis.

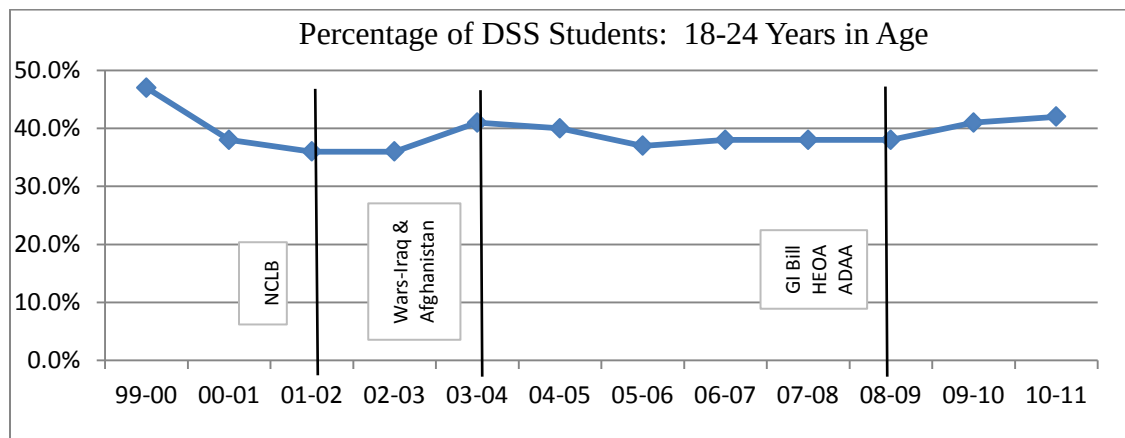


Figure 8. Trend for 18-24 year old DSS Students 1999-2011.

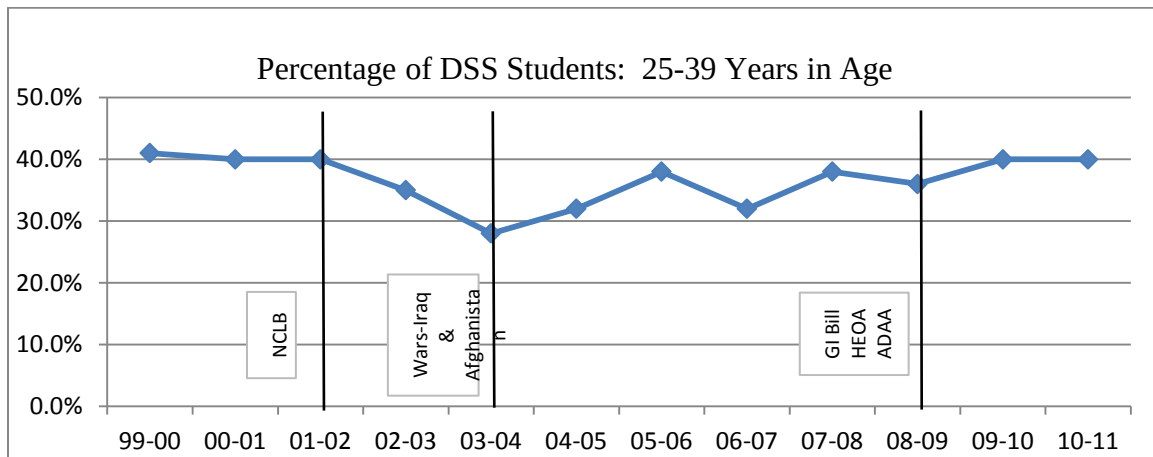


Figure 9. Trend for 25-39 year old DSS Students 1999-2011.

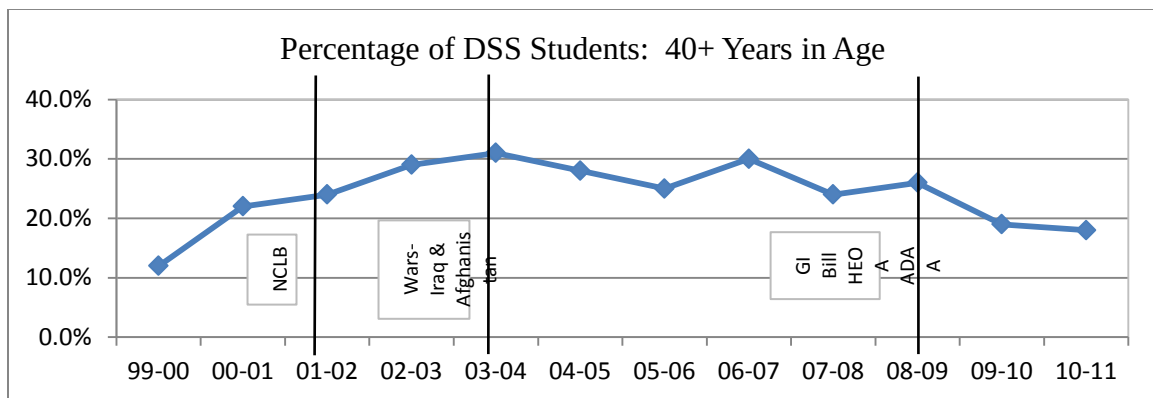


Figure 10. Trend for Age groups of DSS Students 1999-2011: 40 +

Trends for Students Utilizing DSS by Type of Disability and Significant Historical Events

The analysis of types of disabilities consisted of an investigation of the trends for students who utilized DSS by type of disability. This exploration included determining if there was an increase in students with specific disabilities due to the historical events identified in Figures 11 and 12. This was examined through the use of a ‘within disability trend analysis’ and a ‘between disability trend analysis’.

The within disability trend analysis showed an increase in disability in two ways. The first examined how the event may have corresponded to the increase in numbers of students who have enrolling in MSU Billings at higher rates than those without a disability. The second examined whether the increase in students was simply the result of more individuals being diagnosed in a particular category of disability.

The between disability trend analysis explored the maximum inflections for a disability as compared to the minimum inflections for a disability between 1999 and 2011. These minimum and maximum descriptions were utilized as tools for determining if an event influenced the increase or decrease in number of students with disabilities at MSU Billings.

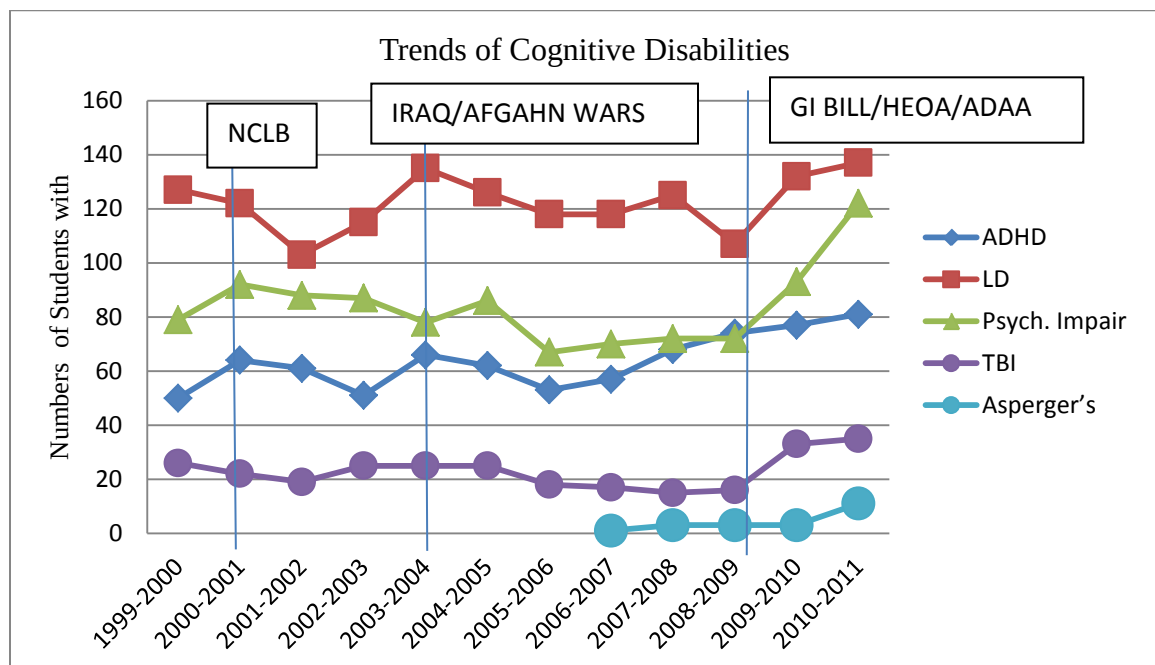


Figure 11. Trends for Cognitive Disabilities and Significant Historical Events

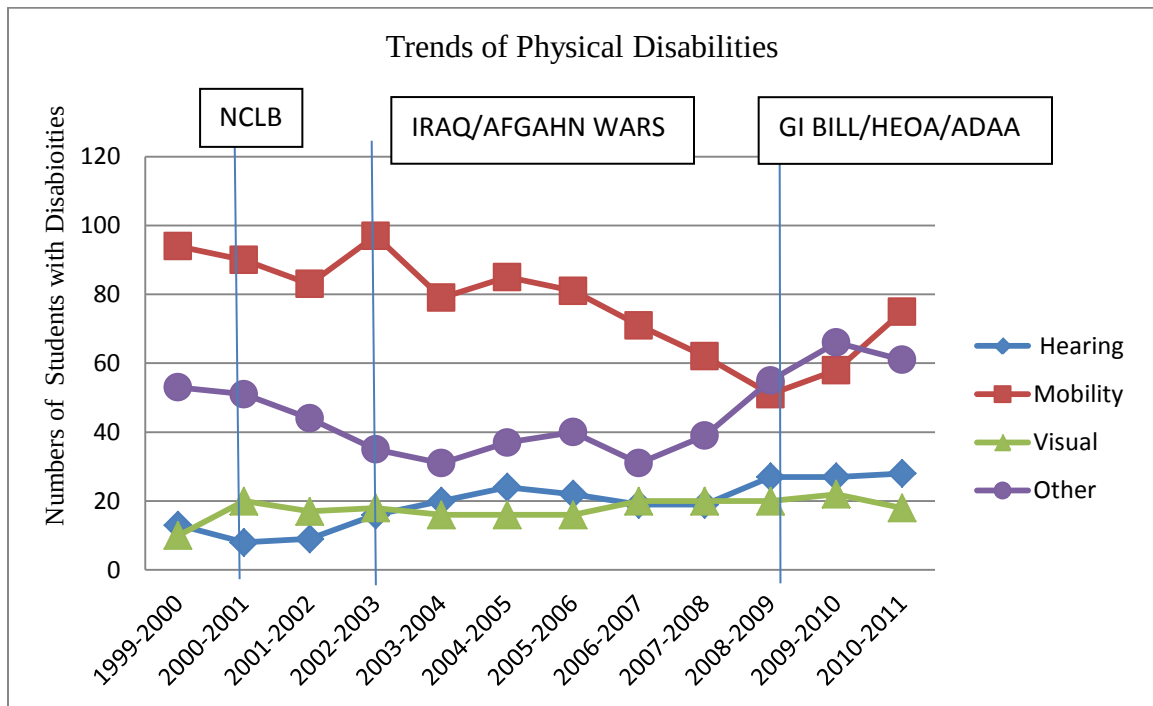


Figure 12. Trends for Physical Disabilities and Significant Historical Events

Within Disability Trend Analysis

Increase in Numbers Corresponding to Historical Events. The following historical events were examined to determine if there was evidence of a trend that corresponded to an increased number of students with disabilities at MSU Billings:

(1) No Child Left Behind Act of 2001. Based on the descriptive analysis there was an increase of 70 students at MSU Billings with disabilities from 197 students in 2001 to 267 students in 2010.

(2) The Higher Education Opportunity Act (HEOA), the Americans with Disabilities Amendment Act and the Post-9/11 Veterans Educational Assistance Act (Post-9/11 GI Bill). All three acts of legislation were enacted in 2008. There was an

increase of 76 students with disabilities at MSU Billings from 191 in 2008 to 267 in 2010 (see Table 1).

(3) Veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present). There was an overall increase of 63 students with disabilities at MSU Billings from 204 in 2003 to 267 in 2010. Additionally, there was an increase in traumatic brain injury (TBI) from 25 in 2002 to 35 in 2010, and an increase in psychologically-related disabilities from 87 to 122 over this same period. Based on these increases in numbers of students with these documented disabilities and anecdotal evidence cited in this study, this trend suggests that an increase in veterans with TBI and psychological impairment at MSU Billings correspond with an increase in veterans from the wars in Iraq (2003-2011) and Afghanistan (2003-present).

Increase in Numbers Corresponding to More Individuals being Diagnosed. The increase in numbers of students with types of disabilities at MSU Billings were examined to determine if this simply resulted from a general increase in individuals being diagnosed. There was a clear trend in the increase in students diagnosed with Asperger's Syndrome since it was introduced as a category, increasing from 1 student in 2005 to 11 students in 2010 diagnosed with this condition (see Table 3).

The total number of students with ADHD and increased from 50 in 1999-2000 to 81 in 2010-2011 and the number of students served by DSS in the category of ADHD increased by 31, or 62%, from 1999 to 2011.

Between Disability Trend Analysis

Comparison of Minimum and Maximum

Inflections to Determine Relation to Events.

A comparison was based on examining the minimum and maximum inflection for a disability, and how the event might have influenced the numbers of students in the years following the event. Based on examining the minimum and maximum inflections to determine relation to events, no trend was identified for types of disabilities with the any of the recent historical events [No Child Left behind Act of 2001; The Higher Education Opportunity Act of 2008 (HEOA); or (3) the Americans with Disabilities Amendment Act (2008)].

However, after examining the minimum and maximum inflections for both psychological impairments and TBI with Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill), there does appear to be a trend, which includes veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan from 2003 to the present (see Figure 11).

The following tables describe the minimum and maximum inflections for both psychological impairments and TBI corresponding with the New GI Bill (2008) at MSU Billings. For psychological impairments, the minimum inflection occurred during 2008-2009 with 72 students, or 1.5% of the population of MSU Billings, and the maximum inflection occurred during 2010-2011 with 122 students, or 2.3% of the student population (see Table 8). For TBI, the minimum inflection also occurred during 2008-2009 with 16 students, or .34% of the student population and the maximum inflection

occurred during 2010-2011 with 53 students or .66% of the student population (see Table 9).

Table 8. Minimum and Maximum Inflections of Psychological Impairments Post-2008

Year	Minimum Inflection	Percent	Maximum Inflection	Percent
2008-2009	72	1.50		
2010-2011			122	2.30

Table 9. Minimum and Maximum Inflections of TBI Post-2008

Year	Minimum Inflection	Percent	Maximum Inflection	Percent
2008-2009	16	.34		
2010-2011			53	.66

Additionally, a Difference in Proportions Test (Answers Research, 2012) was performed to determine if there was a statistically significant difference in growth in the numbers of the DSS subsample in the categories of TBI and psychological disorder. However, it could not be determined if the difference in the growth for the comparable group from 2008 to 2011 was significantly different because the samples were too small. This is true for all the categories of disabilities when attempting use a Difference in Proportion Test to determine if there was statistically significant difference in growth in the numbers during the study.

Analysis of the Local and National Trends and the
Impact of Five Watershed Events on Higher Education Policy

This section describes the five watershed events and how they contributed to increasing trends with students with specific types of disabilities in higher education. First, the impact of the watershed legislation on students with disabilities is described along with the goals that the policy established to assist individuals with accessing higher education. Second, the resulting trends of local and national of types of disabilities in colleges and universities that have resulted from five watershed events are described utilizing the findings of this study.

No Child Left Behind Act of 2001. The No Child Left Behind (NCLB) legislation mandated that students with disabilities be recognized as a subgroup and that their progress in K-12 be assessed to insure academic achievement. In response to legislation, parents were encouraged to obtain diagnoses for LD and ADHD for their children to qualify for an IEP (Individual Education Plan) in order to receive academic support services (Great Schools, 2012). Thus, this legislation contributed to a national increase in transition support to higher education for students with ADHD and LD (Kosine, 2007). The increases in students with these types of disability are likely to lag because they must first qualify in K-12 and then complete K-12 before entering higher education. Locally, the total number of students at MSU Billings with ADHD increased from 50 in 1999 to 81 in 2011 and LD increased from 127 in 1999 to 137 in 2011 (see Table 5).

The Higher Education Opportunity Act of 2008 (HEOA). The reauthorization of the Higher Education Opportunity Act provided increased financial assistance for students with disabilities (Council for Exceptional Children, 2008). It also broadened the definition of intelligence to go beyond mere cognitive limitations (ex: learning disorder) and included adaptive behavior educational barriers that might be conceptual or social in origin and required accommodation. Examples of groups for whom this legislation provided increased financial aid and greater accommodation in higher education include those with intellectual disabilities who were not previously covered by law such as TBI.

In a response to HEOA more cognitively impaired students, such as those with TBI, are attending college because of broadened definitions and financial aid assistance. Since this bill was passed in 2008 there has been an increase from 16 to 35 students with TBI at MSU Billings (see Table 5).

Americans with Disabilities Amendment Act (ADAAA) of 2008. ADAAA was a response to recent Supreme Court decisions that restricted rights of individuals with disabilities, including those individuals who were students in higher education. The ADAAA broadened the interpretation of disabilities to include those students with life barriers related to learning, reading, writing, and thinking or speaking. The change included those who were perceived as disabled. For example a student perceived as having a psychological impairment has access to accommodations even if they are currently on psychotropic medication that manages the condition (Grossman, 2009).

Nationally, as a result of ADAA, veterans with Post-Traumatic Stress Disorder (PTSD) or psychological disorders would qualify for ADA and section 504 (Shackelford, 2009). Because of this, the numbers of students with psychological disorders have been increasing in higher education (Grossman, 2009). Locally, since this bill was passed in 2008, the students with psychological impairments at MSU Billings have correspondingly increased from 72 to 122 (see Table 5).

Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill). The goals of this legislation were that veterans would be provided financial educational assistance, housing allowances and yearly stipends for books (Rhode Island Board of Governors for Higher Education, 2008). As a result of this increased financial support, the numbers of veterans with disabilities in higher education increased. Locally, there is anecdotal evidence from higher education administrators of a large influx of veterans with disabilities which corresponds with the enactment of this legislation (GAO, 2009) (see Table 5).

Veterans with Disabilities from the Wars in Iraq and Afghanistan. Because of the ADAA and the Post-9/11 GI Bill more veterans with disabilities have accessed higher education. Nationally, for veterans and other students with disabilities, the ADAA broadened the definition of disability to include students who were not included in earlier years, such as those with PTSD, TBI, and psychological impairments. Locally, there was also an increase in these types of disabilities since the legislation was enacted in 2008 (see Table 5).

In conclusion, prior to 2008, much of legislation, and subsequent policy of students with disabilities, focused on K-12 and transition services (ex: NCLB, IDEA, and civil rights acts such as the ADA). This subsequently increased the aggregate numbers of students with disabilities in higher education. However, after 2008, legislation changed focus and resulted in a broadening of the definition of a disability, for example, ADA and Higher Education Opportunity Act. These changes in direction and definitions resulted in an increase in the number of students with specific types of disabilities and also enlarged the number of intellectual and cognitive categories in higher education institutions and thus impacting enrollments in higher education. Additionally and more importantly, benefits of the New GI Bill increased funding available for veterans, and the HEOA increased funding available for low income students (Grossman, 2009).

Because of the watershed legislative efforts to broaden the definition of a disability, there have been increases in enrollments by students with intellectual and/or cognitive impairments such as TBI and psychological impairments (GAO, 2009). This is confirmed by NPSAS data indicating that in 2008 the majority of students with disabilities (24 percent) reported mental, emotional or psychiatric condition, or depression. Attention Deficit Disorder was also high with 19 percent of students reporting this as their disability. However, although orthopedic and mobility impairments were 25 percent of the reported disabilities by students in 2000, they constituted only 15 percent in 2008 (GAO, 2009).

Locally, the shift of students with disabilities at MSU Billings from orthopedic and mobility impairments to mental, emotional or psychological conditions has also been

reflected by a large increase in number of students with ADHD, TBI, Asperger's Disorder and psychological impairment since 2008. Additionally, similar to national trends, is a decrease in the number of students reporting mobility impairments since 2000 at MSU Billings (see Table 5).

Summary of the Results

There were two approaches used for the data analysis to describe the DSS students from 1999 to 2111 which include descriptive analyses of students with disabilities: age groups, major/colleges, and types of disabilities. Also historical events were used in order to contextualize the data analysis in terms of what was occurring with disabilities at MSU Billings based on social, economic, and political forces during the period studied, 1999-2011. The following summarizes the four most salient results of the study regarding age groups, disabled students enrolled in the colleges of the university, the types of disabilities, and the impact of recent historical events.

Result One: Age Groups

A summary of the data on three different age groups served by DSS indicated that the percentage of each of the three groups of the total population of DSS fluctuated over the period 1999 to 2011 (see Table 2). The largest fluctuation was in the 40 + group. This group constituted 12% of the DSS population in 1999, and increased to 31% in 2003-04 only to drop to 18% in 2010. However, over time, there was a minimum of actual changes in proportion of age groups of students within the DSS subsample from 1999 to 2011 (see Table 7).

Additionally, non-traditional age students with disabilities (25 years and older) generally constitute a greater proportion of students in their age groups than students without disabilities in the total population at MSU Billings (see Table 2). One illustration, in 2008 there were 31% of the nontraditional students in the 25-39 age group but 36% of the DSS subsample were in this same age group. Furthermore, while nondisabled students in the 40 and older group made up 10% of the MSU Billings population, this same nontraditional group of students with disability made up 26% of their age group.

This corresponds with the national data in 2008 that determined that nontraditional students without disabilities in the age group 24-29 were 16.8% of the total population, while students with disabilities made up 20.2 % of total disabilities. Furthermore, in the 30 or older group, 21.6% of the students claimed to be non-disabled and 25% of students reported a disability (GAO, 2009).

Result Two: Colleges

The results of the data analysis described the proportion of students with disabilities by college per year using percentages and showed noticeable fluctuations within some colleges during the academic years 1999 to 2011. One example is the College of Business with disabilities which totaled 25 students (3.36%) of the university population in 1999, but only 13 students (1.88% of the population) in 2008 (see Figure 3). The data revealed that the percentage of students with disabilities within the colleges at MSU Billings increased or decreased frequently for each of the colleges. In addition, the data revealed that the number of students with disabilities within colleges did not correspond to the size of the college. For example, although the College of Technology

and the College of Arts and Sciences were roughly twice the size of the other colleges, they did not have a proportionally larger number of students with disabilities (see Figures 4 and 5).

Result Three: Types of Disabilities

A summary of the data analysis on the number and percentages of students at DSS and MSU Billings indicated that there was a total increase in number of students from 205 in 1999 to 267 in 2011. This 30% increase in DSS students was greater than MSU Billings 25% increase during the same period. However, in order to determine if there was a statistically significant difference in growth of the subsamples, a Difference in Proportions Test (Answers Research, 2012) was run. The difference was not statistically significant at the 95% confidence level indicating the growth for the comparable groups were comparable in 1999 and 2011 (see Table 6)

Additionally, based on a summary of the data analysis, there was a total increase in almost all of the types of disability categories from the period 1999 to 2011. The only exception was the number of students with mobility impairments which decreased during the time period of this study (see Table 5). A Difference in Proportions Test (Answers Research, 2012) was performed to determine if there was a statistically significant difference in growth in the numbers of types of disabilities for the DSS subsample. However, it could not be determined if the difference in the growth for the comparable types of disabilities was significantly different from 1999 to 2011 because the samples were too small.

Finally, utilizing a within the disability trend analysis, it was determined there was an increase in the number of students diagnosed with ADHD. The total number of students with ADHD increased from 50 in 1999-2000 to 81 in 2010-2011 and the number of students served by DSS in the category of ADHD increased by 31, or 62%, from 1999 to 2011. Furthermore, this increase in numbers of students with this type of disability is consistent with a national increase in higher education (Kosine, 2007).

There was also a clear trend in the increase in students diagnosed with Asperger's Syndrome since it was introduced as a category, with a significant increase from 1 student 2005 to 11 students in 2010, diagnosed with this condition (see Table 5). This may have resulted from it being added as a new classification of disability in 1994, when Asperger's was identified and described in the Diagnostic and Statistical Manual of Mental Disorders for the first time.

Result Four: Watershed Events

Watershed events that have nationally impacted the enrollment of students with disabilities were included in each analysis to provide a timeline of historical context to the study. A comparison of watershed events with local and national enrollment trends of certain types of disabilities tells an interesting story. Prior to 2008, much of legislation and subsequent policy decisions regarding students with disabilities, focused on K-12 and transition services (ex: NCLB, IDEA, and civil rights act such as the ADA). As a result of these transition services there was an increase in numbers of students with disabilities in higher education. However, after 2008, a new direction in legislation resulted in a broadening of the definition of a disability (ex: ADAA and Higher Education

Opportunity Act). These changes in definitions not only resulted in an increase in the number of students with specific types of disabilities but also enlarged the number of intellectual and cognitive categories in higher education institutions. Additionally, legislative benefits of the New GI Bill increased funding available for veterans, and the HEOA increased funding available for low income students (Grossman, 2009).

Furthermore, as a result of the watershed legislative efforts to broaden the definition of a disability, there have been increases in enrollments by students with intellectual and/or cognitive impairments such as TBI and psychological impairments (GAO, 2009). National Post-Secondary Aid Study (NPSAS) data indicates that in 2008 the majority of students (24 percent) reported their type of disability as mental, emotional or psychiatric condition, or depression. Attention Deficit Disorder was also high with 19 percent of students reporting this as their disability. However, although orthopedic and mobility impairments were 25 percent of the reported disabilities by students in 2000, they constituted only 15 percent in 2008 (GAO, 2009).

Locally, the shift of students with disabilities at MSU Billings from orthopedic and mobility impairments to mental, emotional or psychological conditions has also been demonstrated by a large increase in number of students with ADHD, TBI, Asperger's Disorder and psychological impairment since 2008. Additionally, corresponding to national trends, there was a decrease in the number of students reporting mobility impairments since 2000 at MSU Billings (See Table 5).

CHAPTER FIVE

CONCLUSIONS

Introduction

The purpose of this study was to describe and analyze the trends of age, major and type of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011 and contrast them to the MSU Billings general population. Additionally, this analysis of one small university was meant to inform higher education administrators of the impact of watershed events and legislation on students with disabilities so they can plan for policy changes.

The study was guided by the following three research questions:

- 1) How have the characteristics of age, major and type of disability of the Disability Support Services (DSS) subsample changed from 1999 to 2011?
- 2) How have the characteristics of age, major and type of disability of the DSS subsample changed compared to the general MSU Billings population from 1999 to 2011?
- 3) How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011?

Chapter Five provides a summary of the research methods and data collection, answers the research questions, compares the results to the literature, provides a discussion of the research results, and presents recommendations for administrators, faculty, and DSS and suggestions for further research.

Methods and Data Collection

The first approach to data analysis was guided by the first two research questions. To answer these questions, a descriptive approach was employed utilizing tables to provide an overall view of the changes among the study variables of age, major and type of disabilities from 1999 to 2011. Age was described using a table listing percentages of students with types of disabilities in three groups (18-24, 25-39, 40 and older) for each academic year. Major by college was described using percentages of students with disabilities in each college. Types of disabilities were described using the percentage of MSU Billings students in each DSS category for each academic year. Finally, an analysis was completed comparing the proportional growth of the overall population of MSU Billings students with the DSS subsample from 1999 to 2011.

The second approach to data analysis was guided by the third research question: How do five watershed events inform an analysis of patterns related to types of disabilities in the DSS subsample from 1999 to 2011? The five watershed legislative events that occurred during the period that coincides with the years of this study include (1) No Child Left Behind Act of 2001; (2) The Higher Education Opportunity Act of 2008 (HEOA); (3) the Americans with Disabilities Amendment Act (2008); (4) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill); and (5) veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present).

An analysis of the relationship of these watershed events to the DSS subsample was explored, describing how the events coincided with minimum and maximum inflections of trends by types of disabilities from 1999 to 2011. The goal was to

contextualize the impact of the watershed events on one small university and highlight the need for policy considerations for students with diverse types disabilities based on social, economic, and political forces during the period studied (GAO, 2009). To that end, figures were used to describe the trends for cognitive and physical disabilities, and watershed legislative and historical events were included with the data to analyze these events' impact on students with disabilities during the period of this study. Furthermore, the analysis contrasted the local trends for types of disabilities for the DSS subsample to the national trends of types of disabilities.

Results

This section provides the answers to the research questions asked in this study.

Research Question 1: How have the Characteristics of Age, Major and Type of Disability of the Disability Support Services (DSS) Subsample Changed from 1999 to 2011?

Age. A summary of the data on three different age groups served by DSS indicated that the percentage of each of the three groups of the total population of DSS fluctuated over the period 1999 to 2011. The largest fluctuation was in the 40 + age group. This group constituted 12% of the DSS population in 1999, and increased to 31% in 2003-04 only to drop to 18% in 2010. Additionally, non-traditional age students with disabilities (25 years and older) generally constitute a greater proportion of students than the total population at MSU Billings. However, over time, the actual changes in proportion of age groups of students within the DSS subsample from 1999 to 2011 changed minimally (see Table 7).

Additionally, non-traditional age students with disabilities (25 years and older) generally constitute a greater proportion of students in their age groups than students without disabilities in the total population at MSU Billings (see Table 2). For example, in 2008 there were 31% of the nontraditional students in the 25-39 age group in the total MSU Billings population, but 36% of the DSS subsample were in this same age group. Additionally, while nondisabled students in the 40 and older group made up 10% of the MSU Billings population, this same nontraditional group of students with disability made up 26% of their age group.

This is consistent with the national data in 2008 indicating that nontraditional students without disabilities in the age group 24-29 made up 16.8% of the total population, while students with disabilities made up 20.2 % of total disabilities. Furthermore, in the 30 or older group, 21.6% of the students were non-disabled and 25% reported a disability (GAO, 2009).

College/Major. The findings of the data analysis described the proportion of students with disabilities by college/major per year using percentages and display noticeable fluctuations within some majors during the academic years 1999 to 2011. One example is business majors with disabilities who totaled 25 students (3.36%) of the university population in 1999, but only 13 students (1.88%) of the population in 2008. The data revealed that the percentage of students with disabilities within the colleges at MSU Billings both increased and decreased frequently for each of the colleges. In addition, the number of students with disabilities within colleges did not correspond to the size of the college. For example, although the College of Technology and the College

of Arts and Sciences were roughly twice the size of the other colleges, it did not have a proportionally larger number of students with disabilities.

Type of Disability. There was an increase in the number of students with disabilities in the DSS subsample for almost all of the types of disability categories from the period 1999 to 2011. The only exception was the number of students with mobility impairments which decreased during the time period of this study.

A particularly interesting finding was that for certain disabilities there was a clear increase in numbers due to more individuals being diagnosed at the local level that is consistent with national trends. Utilizing a within the disability trend analysis, there was an increase in the number of students at MSU Billings diagnosed with ADHD and Asperger's syndrome. The total number of students with ADHD increased from 50 in 1999-2000 to 81 in 2010-2011 and the number of students served by DSS in the category of ADHD increased by 31, or 62%, from 1999 to 2011. There was also a clear trend in the increase in students diagnosed with Asperger's Syndrome since it was introduced as a category in 2005, with a significant increase from 1 student the first year to 11 students in 2010. This may have resulted from it being added as a new classification of disability in 1994, when Asperger's was identified and described in the Diagnostic and Statistical Manual of Mental Disorders for the first time (Farrell, 2004).

Research Question 2: How have the Characteristics of Age, Major and Type of Disability of the DSS Subsample Changed Compared to the General MSU Billings Population from 1999 to 2011?

A summary of the data analysis on the number and percentages of students at DSS and MSU Billings indicated that there was a total increase in number of students from 205 students in 1999 to 267 students in 2011. The 30% increase in DSS students was greater than the 25% increase in the total population of MSU Billings during the same time period. However, based on a Difference in Proportions Test (Answers Research, 2012) the difference was not statistically significant at the 95% confidence level indicating the growth for the comparable groups were similar in 1999 and 2011 (see Table 6).

Research Question 3: How do Five Watershed Events Inform an Analysis of Patterns Related to Types of Disabilities in the DSS Subsample from 1999 to 2011?

Historical watershed events that impacted the enrollment of students with disabilities nationally between 1999 and 2011 were included in graphs with the analyses of specific disabilities to provide a timeline of historical context to the study. These five watershed events inform the analysis of patterns related to the types of disabilities in DSS subsamples from 1999-2011. Each of these events is discussed with regard to how they contributed to the increases in certain types of disabilities:

No Child Left Behind Act of 2001. As a result of this legislation, parents were encouraged to obtain diagnoses for LD and ADHD for their children to qualify for IEP (Individual Education Programs) in order to receive academic support services (Great

Schools, 2012). Thus, this legislation contributed to a national increase in transition support to higher education for students with ADHD and LD, although many remain academically unprepared (Kosine, 2007). Locally, the total number of students at MSU Billings with ADHD increased from 50 in 1999 to 81 in 2011 and LD increased from 127 in 1999 to 137 in 2011. This increase corresponds with the national trend and is indicative of the efforts to use transition services in K-12 to insure a greater access for students with these types of disabilities to access higher education.

The Higher Education Opportunity Act of 2008 (HEOA). As a result HEOA legislation more cognitively impaired students, such as those with Asperger's and TBI, are attending college because of the broadened definition and financial aid assistance. At MSU Billings there has been an increase from 16 to 35 students with TBI since this bill was passed in 2008. There has also been an increase of students with Asperger's from 3 students to 11. This increase at a small university is evidence of more financial aid funding and a broadening of the definition of intellectual disabilities to include additional considerations for accommodations in the classroom, which corresponds to national trends.

Americans with Disabilities Amendment Act (2008). Nationally, as a result of ADAA (2008), veterans with Post-Traumatic Stress Disorder (PTSD) or psychological disorders qualify for ADA and section 504 (Shackelford, 2009). Locally, since this bill was passed in 2008, the students with psychological impairments at MSU Billings have increased from 72 to 122. This corresponds with national data which indicates that the

numbers are also increasing for psychological disorders in higher education subsequent to the passage of the ADAA (Grossman, 2009).

Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill). The New GI Bill delivered financial support for veterans to enroll in higher education and increasing numbers of veterans with disabilities are attending college as a result of it. Locally, there is anecdotal evidence from the registrar at MSU Billings of a large influx of veterans with disabilities which corresponds with national trends which resulted from the enactment of this legislation (GAO, 2009). Veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present) are enrolling in higher education in the United States.

Because of the ADAA and the Post-9/11 GI Bill more veterans with disabilities will continue to access higher education. Nationally, for veterans and other students with disabilities, the ADAA broadened the definition a disability to include a student with disabilities that were not included in earlier years, such as PTSD, TBI and psychological impairments. This has already increased the number of veterans with TBI and psychological disorders in higher education since enactment in 2008 (Grossman, 2009). Locally, based on this study, there was also evidence of an increase in TBI and psychological disorders since the legislation was enacted in 2008.

Comparison with the Literature

Current literature on students with disabilities in higher education corresponds to the findings of this study.

Increasing Numbers of Students with Disabilities

A summary of the data analysis on the number and percentages of students at DSS and MSU Billings indicated that there was a total increase in number of students from 205 in 1999 to 267 in 2011. Additionally, there was a total increase in almost all of the types of disability categories from the period 1999 to 2011. The only exception was the number of students with mobility impairments which decreased during the time period of this study.

Based on the data from the National Center for Education Statistics (2001), there has also been an increase in students with disabilities in colleges and universities over a period (1996 to 2008) similar to this study (1999 to 2011). There were 892,000 students with disabilities in higher education in 1996 out of a total population of 16,678,000 (5.3%). In 2008, there were 2,266,000 students with disabilities out of 19,054,000 (11.9%). Therefore increase in the national number of students with disabilities in the literature corresponds to the findings in this study.

Additionally, the increase of students with disabilities in college and universities was concurrent with an overall increase in the general U.S. population, which has quadrupled in number in the last twenty-five years (Olney, et al., 2004). Additionally the increase in number of students with disabilities likely resulted from legislation including the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) which outlined civil rights for students with disabilities for access to higher education (GAO, 2009; NCD, 2003).

More recently, the GAO (2009) identified other events in the recent history of higher education that have led to increased access to higher education for students with disabilities nationally, including (1) the Higher Education Opportunity Act (HEOA), (2) Americans with Disabilities Amendment Act, (3) Post-9/11 Veterans Educational Assistance Act of 2008 (Post-9/11 GI Bill), (4) No Child Left Behind Act of 2001, and (5) an increase of soldiers with disabilities resulting injuries from the war in Iraq and Afghanistan.

Furthermore, with an increase in students with disabilities in higher education there was a need to identify types of disabilities in order to provide appropriate support services. The NCD (2003) states that “in order to provide a comprehensive knowledge base from which recommendations for evidence-based practices and policies may be determined, it is necessary to know the status of people with disabilities today in post-secondary education” (p. 4).

Increases in Specific Types of Disabilities

The federal definitions of disability have broadened as the numbers of students have risen to meet the increased knowledge of various mental and physical disorders, and now include hearing, speech, orthopedic, learning, health-related, visual impairments, and other disability-related conditions (NCES, 2003; NCES, 2010). The increase in the variety of types of disabilities is also consistent with the findings of this study with regard to DSS categories at MSU Billings. Asperger’s Syndrome was added as a category by DSS in 2005 in order to broaden the definition of disability and provide support services and accommodations to this new group of students.

Asperger's Syndrome, ADHD and Learning Disabilities. There was an increase in the number of students at MSU Billings diagnosed with Asperger's syndrome, ADHD and Learning Disabilities (LD). While LD students only increased by 10 from 1999 to 2011, it is still the largest group of individuals within the DSS categories.

There was a clear trend in the increase in students diagnosed with Asperger's Syndrome since it was introduced as a category. This was an increase from one student in 2005 to 11 students in 2010, diagnosed with this condition. This may have resulted from it being added as a new classification of disability in 1994, when Asperger's was identified and described in the Diagnostic and Statistical Manual of Mental Disorders for the first time (Farrell, 2004).

There were also increasing numbers of students with learning disabilities, such as ADHD, attending MSU Billings during the same period that students in higher education experienced higher rates throughout the U.S. (Kosine, 2007). The total number of students at MSU Billings with ADHD increased by 62%, from 1999 to 2011, while the number of students in the category of Learning Disability increased by 8% from 127 (1999) to 137 (2011).

This is consistent with the research of DuPaul, et al. (2009) who described this increasing trend of students who are categorized with ADHD in higher education. They maintained ADHD symptomatology can be as high as 25% of college students with disabilities at institutions.

Psychological Impairments and TBI (2008-2011). Sander (2012) describes a new migration of more than half a million veterans who are using the Post-9/11 GI Bill to

access a college education. Additionally, thousands more are anticipated as approximately two million veterans of Iraq and Afghanistan return home. According to Sander (2012) these veterans will suffer from war related disabilities and the increasing trend of students with disabilities such as TBI and psychological impairments.

Consistent with the literature, there were increases in numbers of students at MSU Billings with psychological impairments and TBI, with psychological impairments rising from 72 students in 2008 to 122 students in 2011, as well as for TBI rising from 16 students in 2008 to 35 students in 2011. However, since DSS data did not identify veteran's status, further research will be necessary to determine if their attendance corresponds with watershed historical events.

It is interesting to note that there was local anecdotal evidence that support the findings of this study pointing to an increase in veterans with disabilities from the wars in Iraq (2003-2011) and Afghanistan (2003-present) in higher education based on reports from an administrator at the university. An administrator of support services reported that from 1999 to 2011 one of the most important historical watershed events was "the New GI Bill" because she has seen an increase in "PTSD, TBI and hearing loss". She also believed this trend would increase and is "bracing for it". Additionally, she commented that the documentation for the veterans to receive support services at DSS is too expensive and a barrier to accommodations since some veterans leave MSU Billings due to the cost of getting a diagnosis for a disability (administrator of support services, personal communication, March 5, 2012). However, since DSS does not identify veterans

who utilize their services, there is no way to determine if this is this increase in numbers are related to watershed historical event, such as the New GI Bill.

Discussion of the Findings

This analysis of one small university was meant to inform higher education administrators of the impact of watershed events and legislation on students with disabilities so they can plan for policy changes. This study described the characteristics of age, major and type of disabilities for those students who received services through Disability Support Services at MSU Billings from 1999 to 2011. However, it also included a comparison of these same characteristics with national trends of students with disabilities and a description of legislation and policy that occurred during the period of this study.

The findings shows that as the number of students with disabilities change at MSU Billings, as it has in higher education throughout the country, so does the need to regularly keep records of students with disabilities and identify types of disabilities. This is necessary in order for administrators to plan for, and to provide, services required by these individuals. Additionally, the findings indicate that during the period studied (1999-2011) the growth of students with disabilities actually outpaced the population of the institution by 5%.

Specifically, this study points to the need for administrators to be cognizant of the budget consideration for accommodations for students as the number and types of disabilities change. For example, based on the budget figures from the Director at MSU

Billings (See Appendix D) it is evident that while the numbers and types of disabilities of students have increased over the years the budget has remained fairly steady except for 1999 and 2002 which were “up years” because of increases in the categories of equipment and capital. The results of this study may provide some rationale for an increase in budget due to an increase in the number of students served by DSS.

Interestingly, the most recent enrollment projections for the budget from an administrator at MSU Billings actually indicate a decrease in overall enrollment from 5274 in 2011 to 4478 in 2014 (T. Collins, Budget Director, personal communication, September 22, 2012). Therefore, the projections for the foreseeable future are for two years of decrease in enrollment in the general population of MSU Billings. The effect of a decrease in total student enrollment on the number of students with disabilities is unknown. One could potentially speculate that the number of students with disabilities might also decrease. However, the opposite could occur. Diligent attention to the numbers of students being served by DSS will be necessary in order for administrators to keep abreast of potential changes and the impact on the institution.

Policy Considerations for MSU Billings and Higher Education Administrators

The following recommendations are provided to administrators and DSS at MSU Billings based on the results of this study. Ultimately, these recommendations may also benefit higher education administrators in colleges and universities to consider with policy decisions on students with disabilities.

- 1) Analyze DSS data on students with disabilities annually and provide the results to senior level administrators at the institution. A continuing analysis of data would provide DSS and institutional administrators with current and ongoing figures for numbers of students being served, as well as the types of disabilities among DSS students. The data may have an impact on the resources required for accommodations and administrators could use this information to make decisions about funding levels for DSS. The data may also assist administrators with determining the potential impact of budget cuts on this particular population. The analysis could also be expanded from tracking numbers to monitoring success rate of students with disabilities. The results of this type of analysis could be helpful in knowing if additional support is needed by these students.
- 2) Since MSU Billings is a commuter university with a large percentage of non-traditional students, it may be important to explore the possibility that non-traditional age students with disabilities at MSU Billings may need additional academic and financial support services. The results of this study revealed the non-traditional age students are the majority age of students with disabilities at MSU- Billings. Since numerous authors (e.g. Aslanian, 2002; Bamber and Tett 2000), report that non-traditional age students often require additional support services, such as additional financial aid and academic support services to graduate, students in this age group with disabilities may need even more support. Collaboration between DSS, academic support services and the financial aid office might provide opportunities to track and assist this group of students.

- 3) Educate faculty and staff about the overall increase in numbers and types of students with disabilities at MSU Billings. The results of this study showed that DSS students appear in every college and all majors at MSU Billings. DSS can offer annual workshops to faculty to inform them of the growth in numbers of the eight types of disabilities (along with other individual disabilities) and expand their knowledge of appropriate accommodations and instructional support. Specifically, instructional support may include workshops on Universal Design for Learning (UDL) which is an approach to designing course instruction, materials, and content to benefit people of all learning styles without adaptation or retrofitting (The Ohio State University Partnership Grant, 2012). Ideally, UDL would allow students with, and without disabilities, to access courses without adaptation at MSU Billings.
- 4) Educate key personnel and faculty at MSU Billings about students with specific categories of disabilities such as Asperger's Syndrome, Attention Deficit with Hyperactivity Disorder (ADHD) and Learning Disorders. Currently, education of faculty and staff occurs on a one-on-one or need-to-know basis. There was a clear trend in the increase in students diagnosed with Asperger's Syndrome since it was introduced as a category in 2005, with a noteworthy increase from 1 student 2005 to 11 students in 2010. Additionally, there has been an increase in students with ADHD and Learning Disorders from 1999 to 2011. Therefore, it is recommended that personnel at DSS provide educational opportunities to faculty and administrators regarding accommodations for students in these category of disabilities.

Faculty can best accommodate in the classroom when they are informed by the student of what specific academic accommodations are necessary that are related to their disability. DSS can assist the student by informing them of the specific types of accommodations that are available to in turn provide assistance and direction to the faculty. The literature supports this approach to faculty accommodations noting that with some types of disabilities, such as students with learning disabilities, self-advocacy skills are successful with obtaining accommodations in the classroom (Ancil, et. al 2008; Reed, et. al., 2009). To that end, DSS may want to provide workshops to students to assist them with developing these self-advocacy skills which allow faculty to be better informed about educational aides such as assistive technology.

A broad range of assistive technology was described in the literature for faculty to provide accommodations for students with disabilities. Bremmer et al. (2007) and Culligan (2009) define an array of assistive technology available. Two examples of this are technology amplification devices and video devices that allow hard of hearing students to better access the curriculum in a class. In addition, DSS at MSU Billings currently provides more audio editions of course textbooks for visually impaired students than was ever available in the past (administrator of support services, personal communication, September, 21, 2010)

- 5) Based on findings of historical events, it is recommended that DSS remain current and assist administrators, faculty members, and support services providers of changes in laws, policies and world events that may impact the numbers and types of students

with disabilities enrolling at the institution. For example, a decrease in the number of troops participating in overseas combat may eventually result in a decline in disabled veterans returning to this country and enrolling in higher education as well as impacting the types of disabilities seen in college students. Additionally, the Diagnostic and Statistical Manual of Mental Disorder (DSM) is currently being revised and will be released in the near future. Examinations of drafts have shown that Asperger's, which has seen a large increase on the Billings campus, will no longer be identified as a separate category of diagnosis and, instead, be combined with another existing category (J. Lockhart, psychologist, personal communication, October 31, 2012). This reclassification would impact the annual tracking of disability categories.

Further Research

There has been an overall increase in numbers of students at DSS with psychological impairments, ranging from 72 students in 2008 to 122 students in 2011. In tandem was an increase in students experiencing TBI, ranging from 16 students in 2008 to 35 students in 2011. This finding is consistent with current research in the literature that describes veterans returning to higher education in increasing numbers as a result of emerging trends that include the Global War on Terror (GWT) and the New GI Educational Bill (Church, 2009; GAO, 2009). Currently, there are academic support services for veterans on college campuses, such as Veterans Upward Bound, but they do not track enrollment and matriculation. Since DSS data did not identify veteran status at

MSU Billings, further research will be necessary to identify their numbers and to provide accommodations and support services.

In addition, higher education institutions are being challenged by an increase in the number of students who are experiencing mental health problems (Culligan, 2009; Sharpe, et al., 2005). Therefore, it is recommended that further examination of the prevalence of students with psychological impairments and the impact of this group on the institution. For example, are the campus police experiencing problems related to this increase in number of students with psychological impairments? Are faculty members experiencing more students with psychological impairments in the classroom and not knowing appropriate ways to provide assistance to them? Are the campus mental health providers experiencing an increase in the number of students from this group?

In conclusion, this study, for the first time, provides accurate descriptions of students with disabilities at MSU-Billings so that best practices can be implemented on the behalf of students, by administration, faculty and support personnel. Administrators and faculty of each college benefit from the knowledge of ages, majors and the types of disabilities of students in their programs in order to make informed decisions about accommodations. The student support service providers at DSS at MSU Billings can use this information to know the types of disabilities and other important characteristics, such as age, so that they can anticipate the accommodations and intentional resource allocations that will be needed. Instructors will also be more informed about the types of disabilities the students at MSU Billings have and results can be used to provide professional development to faculty. Additionally, by using MSU Billings as a

microcosm of the impact to key legislation and events on students with disability in higher education during the period from 1999 to 2011, this study offers administrators an opportunity to see the impacts and plan policy for this group.

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APPENDICES

APPENDIX A

INTERNAL REVIEW BOARD APPROVAL

Dear Dr. Dell,

The IRB has approved your project entitled "Persistence of State Funded Students with Disabilities" (IRB 11-014), with the following understanding: That student ndmes will not be included in the data file that you or the other researchers access.

Generally, the Family Educational Rights and Privacy Act (FERPA) prohibits the release of student records of this type without the consent of the student. The IRB believes that this research project should be approved under the "School officials with legitimate educational interest" exemption, but to further safeguard the records, the administrator who provides the data should remove the ndmes of the students before providing them to you for analysis. Please let me know if you have any questions about this procedure.

This approval lasts for one year. If you need to continue your research beyond one year, you must apply for a renewal from the IRB. You may use a copy of this email as the official IRB approval.

Good luck with your research.

Matt McMullen
IRB Chair

Note: This project was evaluated as involving no more than minimal risk, and approved under NIH expedited category 7, Research on individual or group characteristics or behavior.

Matthew N.
McMullen
Department of
Psychology
MSU-Billings
Billings, MT 59101
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406-657-2958

APPENDIX B

INSTRUMENTATION

1500 University Drive
Billings, MT 59101
(406) 657-2283 (voice/TTY/VP)
(406) 657-1658 (FAX)

3803 Central Avenue
Billings, MT 59102
(406) 247-3029 (voice/TTY/VP)
tcarey@msubillings.edu (E-mail)

Updated 04/29/09

etc.--not paying attention and boredom are NOT acceptable examples of substantial limitations on functioning):

7. Current prescribed medications related to disability:

Medication

Effects/side effects

8. What are some accommodations that will help the student with tasks such as reading, taking tests, note taking, etc.?

Please include a psychological evaluation or psycho-educational evaluation for LD & AD/HD.

Attached report must include the following:

- Assessment/evaluation procedures along with scores of all test administered.
- Relevant background information (i.e., history of disability).

I certify that the above referenced client/patient has a "physical or mental impairment the substantially limits one or more major life activities of such individual" as defined by the Americans with Disabilities Act.

In addition, I have the necessary professional qualifications to document my client/patient's disability, and the information provided on this form is accurate to the best of my knowledge.

Name of Professional (please print):

Signature of Professional:

License/certification #: _____ Date: _____

Address: _____

Phone #: _____ Fax #: _____

Return this form to as soon as possible so this student may receive accommodations. Please include the necessary verifying documents from your files.

Montana State University Billings
1500 University Drive
Billings, MT 59101
(406) 657-2283 (voice/TTY/VP)
(406) 657-1658 (FAX)

College of Technology
3803 Central Avenue
Billings, MT 59102
(406) 247-3029 (voice/TTY/VP)
tcarey@msubillings.edu (E-mail)

The student named below may be eligible for services offered through this office. In order to provide these services, we must have verification of the student's disability.

To be completed by STUDENT (please print legibly in ink):

Student's Name: _____
Last First Middle

Social Security #: _____ Date of Birth: _____

I authorize the release of information requested below to Disability Support Services at Montana State University-Billings. (Your evaluator may have additional releases for you to sign).

Student's Release Signature _____ Date _____

To be completed by a licensed/certified PROFESSIONAL:

- 1). Diagnosis: _____
- 2). Disability is: _____ permanent _____ temporary
- Expected duration of temporary disability _____
- 3). Level of severity: _____ Mild _____ Moderate _____ Severe _____ Partial Remission
- 4). Date(s) of diagnosis: _____
- 5). Date of last office _____

Does this student use a wheelchair? No Yes

What kind of mobility restrictions does the student experience?

Visual acuity: Left: _____ Right: _____

Field: Left: _____ Right: _____

Recommended accommodations:

- 8). For a **HEARING IMPAIRMENT** please include an audiological report completed within one year prior to the date of application to MSU-Billings.

DB Loss: _____ Left: _____ Right: _____

Recommended accommodations:

- 9). How does the student's disability **substantially limit** his/her ability to function in an academic environment (i.e., mobility, classroom activities, test taking, etc.)?

- 10). Current prescribed medications related to disability:

Medication

Effects/side effects

I certify that the above referenced client/patient has a "physical or mental impairment the substantially limits one or more major life activities of such individual" as defined by the Americans with Disabilities Act.

In addition, I have the necessary professional qualifications to document my client/patient's disability, and the information provided on this form is accurate to the best of my knowledge.

Name of Professional (please print):

Signature of Professional:

License/certification #: _____ Date: _____

Address: _____

Phone #: _____ Fax #: _____

Return this form to Disability Support Services as soon as possible so this student may begin participation in our program. Please include any verifying documents from your files.

APPENDIX C

RESULTS OF THE BEST FIT ANALYSIS

Number and Percentage of DSS Students with Types of Disabilities

Variable	n (1999)	n (2011)	Difference	%	R ²	Trend	Pos/Neg	Strength of Effect
ADHD	50	81	31	.62	.1759	moderate	positive	(>.16)
Deaf/Hearing	13	28	15	1.15	.0057	weak	negative	(<.01)
LD	127	137	10	.08	.2613	strong	negative	(>.25)
Mobility	94	75	(19)	(.20)	.8666	strong	negative	(<.25)
Psychological	79	122	43	.54	.0514	weak to mod	negative	(<.06)
TBI	26	35	9	.35	.0224	weak	positive	(<.01)
Visual	10	18	8	.80	.0715	strong	positive	(>.06)
Asperger's	1	11	10	11.00	.7314	strong	positive	(>.25)
Other Disabilities	53	61	8	.15	.0048	weak	positive	(<.01)

APPENDIX D

DISABILITIES SUPPORT SERVICES BUDGET, 1999-2011

Disabilities Support Services Budget, 1999-2011

Category	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Contracted/ Other Services	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Supplies & Materials	2,200.00	1,500.00	1,700.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00	2,200.00
Communication	2,416.00	1,500.00	1,416.00	2,416.00	2,416.00	2,426.00	2,426.00	2,426.00	2,426.00	2,471.00	2,471.00	2,471.00	2,471.00
Travel	2,000.00	1,500.00	1,500.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Other	5,471.00	4,000.00	3,971.00	5,471.00	4,337.00	4,337.00	4,337.00	4,337.00	4,337.00	4,337.00	4,337.00	4,337.00	8,337.00
Equipment & Capitol	6,500.00	3,500.00	3,500.00	6,500.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	-
Total	19,587.00	13,000.00	13,087.00	19,587.00	15,953.00	15,963.00	15,963.00	15,963.00	15,963.00	16,008.00	16,008.00	16,008.00	16,008.00