IMPACT OF THE CLERY ACT: AN EXAMINATION OF THE RELATIONSHIP BETWEEN CLERY ACT DATA AND RECRUITMENT AT PRIVATE COLLEGES AND UNIVERSITIES

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The problem this study addressed is the relationship between Clery Act crime data and student recruitment at private colleges and universities. For this quantitative study, I used secondary data from the Department of Education and the Delta Cost Project (2013) to conduct ordinary least squares regression analyses to determine the predictive ability of institutional characteristics, specifically the total number of crime incidents reported in compliance with the Clery Act, on the variance in number of applications and applicant yield rate at private four-year institutions in the United States. Findings showed that the total number of reported incidents was a significant positive predictor of the total number of applications. Conversely, findings also showed that the total number of incidents had a significant negative impact on institutional yield rates. An implication of this study is that although crime statistics required by the Clery Act may not serve as variables used in the student application process, they are part of numerous variables used in the student’s decision to enroll at a particular school. The findings highlight the importance of prioritizing and investing in safety and security measures designed to reduce rates of crime; especially for private, enrollment-driven institutions of higher education.
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TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................................................................................................................ iii

LIST OF TABLES ............................................................................................................................................... vi

CHAPTER 1. INTRODUCTION .............................................................................................................................. 1
  Problem Statement .................................................................................................................................................. 4
  Purpose of the Study ............................................................................................................................................... 4
  Research Questions ............................................................................................................................................... 5
  Hypotheses ............................................................................................................................................................. 5
  Significance of the Study ....................................................................................................................................... 6
  Definitions of Key Terms and Concepts .................................................................................................................... 7

CHAPTER 2. REVIEW OF THE LITERATURE ....................................................................................................... 14
  History and Purpose of the Clery Act .................................................................................................................... 14
  Previous Research Specific to the Clery Act ............................................................................................................ 15
  Crime and Violence on College Campuses ........................................................................................................... 27
  Students’ College Choice ....................................................................................................................................... 32
  Summary .............................................................................................................................................................. 39

CHAPTER 3. METHODS ...................................................................................................................................... 42
  Sample ................................................................................................................................................................. 43
  Data Collection .................................................................................................................................................... 43
  Variables ............................................................................................................................................................... 43
  Data Analysis ........................................................................................................................................................ 47
  Data Inspection and Transformation ...................................................................................................................... 48
  Procedures to Review Bias in the Regression Models ............................................................................................ 49
  Delimitations ........................................................................................................................................................ 50
  Limitations ........................................................................................................................................................... 50

CHAPTER 4. RESULTS AND FINDINGS ........................................................................................................... 52
  Outlier and Influential Cases Analyses .................................................................................................................. 53
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Dependent and Independent Variables Used in Study</td>
<td>46</td>
</tr>
<tr>
<td>Table 2</td>
<td>Outliers for APPS Dataset</td>
<td>54</td>
</tr>
<tr>
<td>Table 3</td>
<td>Influential Cases for APPS Dataset</td>
<td>56</td>
</tr>
<tr>
<td>Table 4</td>
<td>Outliers for YIELD Dataset</td>
<td>57</td>
</tr>
<tr>
<td>Table 5</td>
<td>Influential Cases for YIELD Dataset</td>
<td>58</td>
</tr>
<tr>
<td>Table 6</td>
<td>Characteristics of Sample</td>
<td>59</td>
</tr>
<tr>
<td>Table 7</td>
<td>Descriptive Statistics for APPS and YIELD Datasets</td>
<td>60</td>
</tr>
<tr>
<td>Table 8</td>
<td>Correlation Matrix for APPS Dataset</td>
<td>64</td>
</tr>
<tr>
<td>Table 9</td>
<td>Multicollinearity Statistics for Predictor Variables in APPS Dataset</td>
<td>65</td>
</tr>
<tr>
<td>Table 10</td>
<td>Regression Results for APPS Dataset</td>
<td>66</td>
</tr>
<tr>
<td>Table 11</td>
<td>Structure Coefficients for APPS Dataset</td>
<td>67</td>
</tr>
<tr>
<td>Table 12</td>
<td>Unique and Total of All Common Effects for each Predictor in APPS Dataset</td>
<td>68</td>
</tr>
<tr>
<td>Table 13</td>
<td>Combined Regression and Commonality Results for APPS Dataset</td>
<td>69</td>
</tr>
<tr>
<td>Table 14</td>
<td>Correlation Matrix for YIELD Dataset</td>
<td>71</td>
</tr>
<tr>
<td>Table 15</td>
<td>Regression Table for YIELD Dataset</td>
<td>73</td>
</tr>
<tr>
<td>Table 16</td>
<td>Structure Coefficients for YIELD Dataset</td>
<td>74</td>
</tr>
<tr>
<td>Table 17</td>
<td>Unique and Total of All Common Effects for Each Predictor in the YIELD Dataset</td>
<td>75</td>
</tr>
<tr>
<td>Table 18</td>
<td>Combined Regression and Commonality Results for YIELD Dataset</td>
<td>76</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Higher education has played a variety of roles in the United States. From the development of global, democratic citizens to the pursuit of individual prosperity to a societal structure founded on the concepts of human capital, higher education offers a variety of promises to a wide range of people. Such aspirational purposes are moot, however, if the baser hierarchical needs fail to be realized or maintained (Maslow, 1943). Throughout the history of higher education in the United States, many campuses and numerous individuals have been subject to unfortunate incidents of victimization, crime, and violence.

In 1987, a student named Katherine Hawelka enrolled in Clarkson University in rural New York, a higher education institution of just over 4,000 students. One reason she chose Clarkson was due to the perception of safety at a small, rural school. Tragically, Katherine was raped and murdered on campus (Greene, 1988). At the University of Florida in 1990, five students were murdered and their bodies were then mutilated on the Gainesville campus (Kalette, 1990). In a study conducted in 1998, researchers surveyed over 3,400 students across 12 institutions and found that more than one-third of the students reported they were victimized in some way during the 1993 – 1994 school year (Fisher, Sloan, Cullen, & Lu, 1998). Such experiences, understandably, incite an institutional response of rededication to safety and security. The Clery Act (1990) was created in the wake of these tragedies, among many, and the amount of crime and victimization troubling our country’s institutions of higher education.

The Crime Awareness and Campus Security Act, otherwise known as the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (20 U.S.C. §1092 (f)), and
originally known as the Student-Right-To-Know and Campus Security Act, [hereafter referred to as “the Clery Act”] was passed in 1990. In a horrific incident in 1986, Jeanne Clery was raped and then murdered in her residence hall room while attending Lehigh University. The Clery family filed suit claiming that had the university publicly disclosed the crimes reported on campus, Jeanne would have chosen to not attend the school. Later, it was discovered that Lehigh University had a total of 38 reported assaults and other violent crimes over the three-year period prior to Jeanne’s enrollment.

The Clery family settled its suit against Lehigh University for $2 million and founded the nonprofit organization Security on Campus in 1987. Eventually, the Clery’s lobbied policy makers, the Department of Education, and the Federal Government; and ultimately the Clery Act was passed requiring campus crime statistics to be reported publicly. This eventually led to the Annual Security Report, which includes crime statistics as required by the Clery Act, and its dissemination to all current students and employees for any institution that receives federal financial aid. Annual Security Reports not only includes numbers of reported crimes for a variety of categories, but it also requires institutions to policies, information on campus security, and reporting protocols. This legislation was deemed necessary, not solely because of Jeanne Clery’s rape and murder, but also because of the perception that the rate of crime on college campuses was increasing. However, at the time there was no way to determine if this perception of campus crime rates was accurate (Gregory & Janosik, 2003).

The Clery Act has been a topic of debate and discussion since its inception in 1990. The primary purpose of this legislation is to track and report specific reported crimes and misconduct for prospective students and employees to inform their decision-making processes
(Gregory & Janosik, 2002). Although the Clery Act has raised awareness among administrators on campus, research has shown that the Act has had limited effects on creating a safer campus (Gregory & Janosik, 2012; Janosik & Gregory, 2009). However, questions remain about the relationship between data found in Clery Act reports and the behaviors of prospective students in the observable form of application and enrollment.

Higher education in the United States provides a multitude of options for individuals who wish to pursue postsecondary education. Such options provide certifications, non-matriculated curricular experiences, and degrees. Students may choose to enroll in an online program or attend a brick and mortar campus. Students may also choose an institution based on private or public control. They are free to seek out an institution due to its size of student body or its geographical size. In addition to these options, students can choose a college or university based on a plethora of other variables including mission, location, culture, athletics, and history. As potential students are faced with countless variables and choices, many institutions of higher education have utilized management strategies from corporations in attempt to influence and earn customers. As such, colleges and universities have engaged within a marketplace that in which there is the added importance of selling outcomes such as skills, networks, prestige, and employability (Cohen & Kisker, 2010; Lucas, 2006).

The selling of student outcomes aligns with higher education’s transition from public-good to private-benefit. Public funding has decreased over the generations which has only served this transition (LePore, 2012). Every institution of higher education is dependent upon effectively recruiting and enrolling students. Moreover, institutions have a responsibility of
recruiting those students who are reasonably prepared for collegiate academic requirements which adds additional challenge to recruitment goals (Duniway, 2012).

Problem Statement

The issues involving safety and security on campuses have been contentious topics among researchers and practitioners within higher education (Dannells, 1997). Institutional processes, behavioral expectations, and federally mandated reports are complex and are compounded by other salient concerns including student development theory, institutional accountability, and increased competition in the academic marketplace (Dannells, 1997; Karp & Conrad, 2005; Cooper & Schwartz, 2007; Stimpson & Janosik, 2011).

Institutional dependence on recruitment and enrollment in American higher education presents a unique challenge when one considers the purpose of the Clery Act. The concepts of transparency and full disclosure about safety issues, statistics on the occurrence of criminal behavior, and the number of student disciplinary referrals appears at odds with attempts to recruit students. Subsequently, the relationship between providing Clery Act data and the ability of a college or university to recruit and enroll students is still unclear. Analyses of the effectiveness or impact of the Clery Act are limited and much of the literature is dated. As the national conversation about institutional accountability increases along with the visibility of federal investigations into institutions of higher education, the studies that have been conducted may no longer be accurate or even relevant.

Purpose of the Study

The purpose of this study was to determine whether or not the Clery Act does impact institutional recruitment efforts. The study explored reported Clery Act data to determine if
such crime statistics were able to predict application quantity and yield rates. I proposed this study in order to understand the importance and implications of the federally mandated requirement of disclosing campus crime statistics. Results speak to the impact of the Clery Act, which continues to be a policy topic of discussion due to issues surrounding compliance and institutional accountability.

Research Questions

The following research questions guided this study:

1. Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the quantity of applications at private, four-year colleges and universities?

2. Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the yield rates at private, four-year colleges and universities?

Hypotheses

The foundational premise of the Clery Act is to provide consumer information to potential students and employees. In the case of Jeanne Clery, her family stated that knowledge of the campus crime statistics at Lehigh University would have led to a different choice of school. With this in mind, the basic hypothesis of this study was that an inverse relationship exists between the institutional crime statistics as reported and the applications and yield rate. In other words, as the numbers of criminal offenses, hate crimes, arrests, and disciplinary referrals increase, the application quantities and yield rates decrease.
Significance of the Study

Exploration of the Clery Act, a substantial yet unfunded federal mandate, may provide clarity for administrators responsible for compliance. Resulting insights may be provided to policy-makers and other governing bodies. If the study indicated that the Clery Act data do not statistically significantly predict applications and yield, warranted changes may be in order and proposed. If the study indicated the Clery Act data can indeed statistically significantly predict those two variables, institutional administrators are then afforded a glimpse into valid reasons for their efforts while providing support to policy makers.

Studies and publications regarding the Clery Act and its effectiveness are relatively scarce. In 2012, an examination of published research regarding the Clery Act was conducted. It was determined that little formal study had been completed or published regarding the impact from the Clery Act (Gregory & Janosik, 2012). The most common theme throughout the study was that institutional administrators are confused by the requirements of the Clery Act and that more guidance is needed in order to ensure compliance (Gregory & Janosik, 2012; Karjane, Fisher, & Cullen, 2002). To that end, a handbook has been established for Clery Act compliance officers. The handbook was updated with additional guidance and clarification in 2011 and again in June 2016.

Anecdotally, administrators believe that the Clery Act and its reported statistics are not commonly used as part of a decision-making process for a prospective student or employee. Confounding these issues is the fact that few publications have addressed the effectiveness or impact of the Clery Act (Stimpson & Stimpson, 2008). At this time, no studies have yet to be
published that examine the effectiveness of the Jeanne Clery Act as it relates to applications and yield rates.

This study provided a different level of implication to the area of research surrounding the Clery Act. Compared to studies focused on the perceptions of students, families, or administrators, this study examined observable behaviors of students. The recruitment process includes multiple decision-points for potential students from application to enrollment. This study examined rates of application and yield; both are variables controlled by actions on behalf of the student.

Definitions of Key Terms and Concepts

Throughout the study, numerous terms are used. In order to clarify those terms, the following definitions were used to provide consistency. Per the Clery Act, crimes are classified based on the Federal Bureau of Investigation’s (FBI’s) *Uniform Crime Reporting Handbook (UCR)*. As such, the UCR was utilized to provide the following definitions:

*Aggravated Assault*

Aggravated assault has been defined by the FBI as an unlawful attack of an individual by another with the purpose of inflicting severe bodily injury. Typically, this category of assault includes the use of a weapon or other means likely to produce death. The UCR considers a weapon to be any commonly known weapon, such as a gun, knife, or club, or by any other items which become weapons when used in the commission of a crime (Federal Bureau of Investigation [FBI], 2004). Aggravated assault is a unique category of criminal offense with statistics to be reported as required by the Clery Act (US Department of Education [DOE], 2011).
Arrests

For the purposes of reporting statistics as part of the Clery Act, arrest is defined as individuals who are processed by arrest, citation, or summons (FBI, 2004). Arrests for illegal weapons, drug abuse violations, and liquor law violations are categories requiring statistics to be reported as required by the Clery Act (DOE, 2011).

Burglary

The FBI (2004) defined burglary as any unlawful entry into a structure in order to commit a theft or felony. Burglary is a unique category of criminal offense with statistics to be reported as required by the Clery Act (DOE, 2011).

Clery Act Crime Statistics

The Clery Act requires institutions to disclose four general categories of crime statistics: criminal offenses, hate crimes, arrests, and disciplinary referrals (DOE, 2011).

Criminal Offenses

The Clery Act defines criminal offenses as murder and non-negligent manslaughter, negligent manslaughter, sex offenses, robbery, aggravated assault, burglary, motor vehicle theft, and arson. Any of these criminal offenses that occurs within Clery Act geography must be reported per the requirements of the Clery Act (DOE, 2011).

Dating Violence

As part of the Violence Against Women Act reauthorization of 2013, dating violence was added to the list of required offenses to be reported as part of an institution’s Annual Security Report, which includes Clery data. Dating violence was defined as violence committed by an
individual who is currently or has been in a romantic or intimate relationship with the victim (DOE, 2014).

Domestic Violence

As part of the Violence Against Women Act reauthorization of 2013, domestic violence was added to the list of required offenses to be reported as part of an institution’s Annual Security Report, which includes Clery data. Domestic violence was defined as a felony or misdemeanor crime of violence which has been committed by a current or former spouse or intimate partner of the victim. This includes such crimes committed by an individual with whom the victim shares a child, by an individual currently or previously cohabitating with the victim as spouse or intimate partner (DOE, 2014).

Drug Abuse Violations

Statistics are required to be reported for arrests and referrals for disciplinary action for drug abuse violations per the requirements of the Clery Act. This is defined as any violation of laws which prohibit the production, distribution, possession, and/or use of controlled substances or paraphernalia utilized for those controlled substances. This violation includes the unlawful manufacture, distribution, sale, purchase, use, possession, or transportation of any controlled substance (DOE, 2011; FBI, 2004).

Hate Crimes

A hate crime has been defined as a criminal offense committed against an individual which was motivated, at least in part, by the offender’s bias. The categories of bias include the victim’s perceived or actual race, religion, gender, gender identity, sexual orientation, ethnicity, national origin, and disability (DOE, 2014; FBI, 2004). For the purpose of reporting crime
statistics per the requirements of the Clery Act, hate crimes can include any of the following offenses: murder and nonnegligent manslaughter, sexual assault, robbery, aggravated assault, burglary, motor vehicle theft, arson, larceny (theft), simple assault, intimidation, and destruction of property (DOE, 2011).

*Illegal Weapons*

Statistics are required to be reported for arrests and referrals for disciplinary action for weapons per the requirements of the Clery Act. This is defined as the violation of laws or ordinances regulating firearms, cutting instruments, explosives, incendiary devices, or other deadly weapons. Violations may come in the form of manufacture, sale, purchase, transportation, possession, concealment, or use (DOE, 2011; FBI, 2004).

*Liquor Law Violations*

Statistics are required to be reported for arrests and referrals for disciplinary action for liquor law violations per the requirements of the Clery Act. This is defined as any violation of state or local laws which prohibit the manufacture, sale, purchase, transport, possession, and/or use of alcoholic beverages. The section of liquor law violations does not include incidents of driving under the influence or public intoxication (DOE, 2011; FBI, 2004).

*Murder and Non-negligent Manslaughter*

Defined as the willful (non-negligent) killing of a person by another person (FBI, 2004). Murder and non-negligent manslaughter are a unique category of criminal offense with statistics to be reported as required by the Clery Act (DOE, 2011).

*Negligent Manslaughter*

Negligent manslaughter is defined as the killing of a person by another person due to
gross negligence, or intentional failure which is in direct disregard of consequences (FBI, 2004). Negligent manslaughter is one category of criminal offense with statistics to be reported as required by the Clery Act (DOE, 2011).

**Noncampus**

The term noncampus is used as part of the geography requirements under the Clery act. Noncampus is defined as any building or property that is either owned or controlled by an official student organization. Additionally, noncampus is defined as any building or property that is used in direct support, or in relation to, the school’s educational purpose that is frequently used by students. Noncampus property must fall outside the reasonable contiguous geographic area of campus (DOE, 2011).

**On-Campus**

This term is used to describe geographical locations that an institution owns or controls, are reasonably contiguous to one another, and are in direct support or relation to the school's educational purpose (DOE, 2011).

**On-Campus Student Housing**

This term is used as a subset to the aforementioned category of geography, on-campus. On-campus student housing includes undergraduate, graduate, and married student housing options, single-family houses used for student housing, summer school student housing, facilities used for student housing that also house faculty, staff, or other individuals, facilities owned by a third-party but are used by the institution to provide student housing, and facilities that are used by student groups (both officially and not officially recognized) that are owned or
controlled by the institution or exist on property that is owned or controlled by the institution (DOE, 2011).

Public Property

The Department of Education (2011) described this category of geography included in an institution’s Clery data as all public property (i.e., thoroughfares, streets, sidewalks, and parking facilities) that is part of the campus or immediately adjacent. The adjacent public property must also be accessible from the campus proper. As an example, public property includes a public sidewalk, the street, and then the following sidewalk. The private property on the other side of the far sidewalk is not considered geography covered by Clery unless it meets any other requisite.

Referral for Disciplinary Action

This action is defined as the referral of any individual to an official who initiates disciplinary action, for which a record is kept, and that may result in an imposed sanction(s). Referral for disciplinary action for illegal weapons, drug abuse violations, and liquor law violations are categories requiring statistics to be reported as required by the Clery Act (DOE, 2011). The disciplinary process may be titled “mediation,” “judicial process,” “student conduct,” or some other term. The referral may or may not come from police and there may or may not have been an arrest made for the behavior.

Robbery

The FBI (2004) defined robbery as taking, or attempting to take, anything of value from an individual or individuals by force, threat of force, violence, or by inciting fear. Robbery is a
unique category of criminal offense with statistics to be reported as required by the Clery Act (DOE, 2011).

**Sexual Offenses**

With the reauthorization of the Violence Against Women Act in 2013, reporting sexual offenses on-campus now include unique categories for rape, fondling, incest, or statutory rape. Previously, sexual offenses were only categorized as forcible (rape, sodomy, sexual assault with an object, and fondling) or non-forcible (incest and statutory rape). This change came about to ensure more consistent reporting and clarity to the category (DOE, 2014). The Federal Bureau of Investigation (2013) recently released a new definition of rape as, “Penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim” (p. 3).

**Uniform Crime Report Handbook**

Per the Clery Act, crimes must be classified based on the FBI’s Uniform Crime Reporting Handbook (UCR). Specific to sexual offenses, definitions from the FBI’s National Incident-Based Reporting System (NIBRS) edition of the UCR. Hate crimes must be classified in accordance with the FBI’s Uniform Crime Reporting Hate Crime Data Collection Guidelines and Training Guide for Hate Crime Data Collection (DOE, 2011).

**Violent Crimes**

Based on the FBI’s UCR (2004), violent crime is composed of murder and nonnegligent manslaughter, forcible sex offenses, robbery, and aggravated assault. In addition to this requirement, this proposed study includes dating violence and domestic violence.
CHAPTER 2

REVIEW OF THE LITERATURE

This chapter includes a review of literature and research pertaining to the proposed study. The literature review will address the following areas: (a) Clery Act history and purpose; (b) previous research on the Clery Act; (c) crime and violence on campus, and; (d) students’ college choice. The final section of the chapter summarizes the review with a highlight of the most salient information related to the proposed study.

History and Purpose of the Clery Act

Originally signed in 1990 as the Crime Awareness and Campus Security Act (20 U.S.C. §1092 (f)), the Clery Act requires all institutions receiving federal financial aid to annually disclose the number of criminal offenses, hate crimes, arrests, and disciplinary referrals which occurred within the institution’s geography. This disclosure is referred to as the Annual Security Report. Provisions within the Clery Act require a three-year period for reporting frequency, to make potential students and employees aware of these reports and the way in which to obtain them, to establish and distribute campus security policies, to implement programs and education regarding campus security, and to provide timely warnings when a danger is posed to the campus (Janosik & Gregory, 2009; Rund, 2002)

The Clery Act has the primary purpose of requiring college and university administrators to consistently report incidents of campus crime. According to Janosik & Gregory (2009):

The goals of the legislation are to (a) provide crime information so that parents, potential students, and potential employees will be better able to evaluate an institution before they make a commitment to it; (b) educate students and employees
about campus crime so they might better protect themselves from the risks in their campus environment; and (c) reduce crime (p. 209).

In 2014, new legislation took effect which impacted the Clery Act. The reauthorization of the Violence Against Women Act (VAWA) was passed by Congress in 2013 and included various updates and changes which directly impact the Clery Act. The Campus Sexual Violence Elimination (SaVE) Act, which increases transparency and guarantees victim’s rights, was signed into law as part of the VAWA reauthorization. These legislative updates require additional statistics to be recorded as part of an institution’s Annual Security Report each year. The newly added categories of crime statistics include domestic violence, dating/intimate partner violence, and stalking (DOE, 2014).

The topic of campus crime, especially as it relates to Title IX, has been a prominent fixture in the public forum. From the reauthorization of VAWA to the numerous Title IX investigations publicized by the Department of Education, campus safety and security is not an obscure concept understood only by those faculty, staff, and administrators working in higher education.

Previous Research Specific to the Clery Act

Since 2007, there has been little change to the quantity of research on the Clery Act and much of the research that was conducted and published in the 1990s, during the first decade of its existence. In an examination of publications regarding the Clery Act, researchers concluded the press has had a more prominent influence on espoused views of the Clery Act than does true academic research (Gregory & Janosik, 2012).
For this chapter, the research on the Clery Act has been categorized into several thematic categories. First, the Clery Act has been perceived as confusing and poorly administered which has led to issues with compliance. Second, researchers have criticized the requirements of the Clery Act as maligned to its stated goals. Third, studies have been conducted to measure the awareness-levels for the Clery Act as well as its perceived impact on college campuses. Fourth, and last, the Clery Act has been found to provide a positive influence on administrators and the confidence imbued from them to campus constituents.

**Compliance**

Only four years after the Clery Act, originally known as the Student Right-To-Know and Campus Security Act, was signed into law, Fisher (1995) reported that there was already a question about institutional compliance. In 1997, a study was conducted by Gehring and Callaway to examine compliance with the Clery Act, which was relatively new legislation at that time. They concluded that few institutions were compliant with the requirements set forth in the Clery Act. Of the 149 institutions researched, only four were found to have complied with the legislation’s guidelines (Gehring & Callaway, 1997). Issues with compliance in the form of accurate information continued in a study five years later. Karjane, Fisher, and Cullen (2002) studied the Annual Security Reports from over 1,000 randomly selected institutions which are mandated to comply with the Clery Act. The study reported that of those who included crime statistics in their ASR, 84.2% included the crime statistics from the previous three years, which is a requirement of the Clery Act. Fewer institutions, 36.5% of those studied, complied with the requirement to subdivide sexual offenses into the two required categories: forcible and nonforcible.
A number of studies were conducted during the subsequent decades which provide insight into the legislation’s internal issues as well as the institutional barriers which lead to the lack of compliance. Compounding the issues surrounding compliance is the lack of appropriate, effective, and regular training for administrators and compliance officers at institutions of higher education (McNeal, 2007).

Issues Internal to the Legislation

Successful compliance with the requirement set forth by the Clery Act has been a challenge for institutional administrators since its inception. Studies have posited the ambiguity found within the parameters and requirements of the Clery Act has caused these issues. Reviewers of case law have asserted the guidelines within the Clery Act lack detail and transparency and as a result have been the primary source for noncompliance (Ahn, 2010; Carter, 2002; Griffaton, 1993). More specifically, McNeal (2007) found that a majority of campus law administrators cited the structural issues within the Clery Act as well as the lack of clarity as the greatest challenge to compliance.

One area in which the Clery Act has been found to be overly vague is in regards to campus geography requirements (McNeal, 2005, 2007; Nobles, Fox, Khey, & Lizotte, 2013). Such opacity has led to confusion regarding what to report, based on location. Compliance, in the form of accuracy, is questionable when administrators report confusion regarding how to appropriately classify incidents.

Effective compliance with the requirements of the Clery Act is a key component of truly evaluating its impact. Informed consumerism requires accurate and reliable information.
Inaccurate crime statistics would not allow potential students and their families to truly make a choice based on rates of misconduct and crime on campus.

Institutional Barriers

Successful implementation of the Clery Act has been plagued not only by the legislation’s lack of clarity, but also by internal obstacles at colleges and universities. Several studies found that institutional administrators continue to fail in compliance efforts as they fail to provide the required amount of institutional resources to be successful (McNeal, 2005, 2007; Niccolleti, Spencer-Thomas, & Bollinger, 2010).

Specifically, McNeal (2007) concluded that compliance with the Clery Act is hindered by a lack of institutional support in the form of dedicated financial support and funding. McNeal’s study found that 66% of survey participants indicated compliance with the Clery Act is made more difficult due to a lack of institutional support. This finding is supported by Gregory and Janosik (2002) who assert that compliance with the Clery Act, which requires substantial effort by administrators, should include financial support from the federal government.

A third institutional barrier exists in the form of resistance to report any information that could be damaging to an institution’s image, reputation, or prestige (Ahn, 2010; Carter, 2002). However, one publication stated the potential penalties and the negative press from intentionally misleading with false crimes statistics would cost institutions much more than their candid and honest report of crimes (Griffaton, 1993).

The Clery Act has multiple purposes, as we have already established. Informed consumerism is but one aspect and this study will be able to clarify if this third institutional barrier is righteous. And if crime statistics do damage recruitment efforts, administrators will
be motivated to seek out solutions to any perceived or real issues with campus crime. This supports another goal of the Clery Act which is to reduce crime.

**Critical Examination**

Underreporting has been the most prominent criticism of the Clery Act. The issue of underreporting stems from multiple sources including the intentional choice by victims/survivors to not report as well as variety of barriers that may exist, intentionally or otherwise, preventing the information from reaching the appropriate authorities (Brinkley, 2005; Fisher, 1995; Fisher, Cullen, & Turner, 2000; Fisher, Hartman, Cullen, & Turner, 2002; Gardella et al., 2015; Palmer, 1993).

The issue of underreporting is conspicuous when one considers incidents of sexual offenses. Many of these incidents regularly go unreported because the survivor is embarrassed or knows their assailant (Fisher, 1995). A study was conducted in 2000 to examine the sexual victimization of college women. One of the findings related specifically to the issue of underreporting. Researchers concluded that approximately one-third of incidents involving sexual victimization were reported to authorities or college officials. This means that two-thirds of sexual victimization incidents go unreported, calling into question the true accuracy of the Clery Act as a measure of campus crime. During this same study, survivors provided numerous reasons for choosing to not report including the belief that the incident was not serious or harmful enough or that it was unclear if a crime had been committed. The Fisher study also included a number of barriers to reporting that impacted the underreporting, including: survivors did not want family or others to know; survivors chose not to report due a lack of proof that an incident occurred; survivors feared retaliation by assailant; survivors feared
hostility from law enforcement and justice system, and; survivors anticipated law enforcement would trivialize the report (Fisher et al., 2000). While the reasons may vary, the result remains that incidents, including sexual victimization, go largely unreported.

In addition to the issues of underreporting, the Clery Act has been described as having an inherent flaw in that it overemphasizes serious offenses and thus discounts what has been determined to be the most common crime on college campus: larceny-theft (Barnes, 2009; Fisher, 1995; Fisher et al., 2002). According to Barnes (2009), on college campuses in Virginia, the “vast majority of reported offenses involve larcenies and vandalism” (p. 178). These studies of the Clery Act tell us reported crime statistics do not accurately report the nature of an institution’s true criminal or culture of misbehavior. This lapse has been described as a “gross oversight” (Fisher et al., 2002, p.89).

Official and accurate statistics from institutions found in Annual Security Reports, even if in compliance with all Clery Act requirements, are subject to methodological problems such as the reporting hierarchy rule and only crimes reported to campus security authorities (Fisher et al., 2002; Nobles et al., 2013). Furthermore, researchers have criticized the effectiveness of the Clery Act as it does not consider or reflect decades of criminology research and the challenges of accurately measuring crime (Fisher et al., 2002).

The reporting requirements of the Clery Act simply enumerates incidents, not a rate associated with the number of students, faculty, and staff. Raw data are able to tell consumers some information, but may lead to a false sense of security. Researchers have suggested that variables such as institutional size, the magnitude of the residential population, the prevalence of Greek organizations, school type, school setting, and physical size of the campus can all
influence the crime rate (Fisher, 1995). Griffaton (1993) warned that raw numbers were insufficient to provide meaning to the crime statistics required by the Clery Act and that institutions should include statements to explain the significance of those data within the Annual Security Report. Failure to do so meant, “college students are left with speculative rather than informed choices” (Griffaton, 1993, p. 578).

Researchers have asserted that the Clery Act has failed to achieve its goal of providing valid and reliable information regarding institutional crime and safety (Fisher et al., 2002; Nobles et al., 2013). In addition to the previously explored issues with compliance and underreporting, the Clery Act fails to meet its goals because of the geographical definitions and requirements even for those institutions which do fully comply (Fisher, 1995; Nobles et al., 2013). A study was conducted of those administrators charged with Clery Act compliance and the results included 86% of respondents indicated that the geography guidelines are vague. Further, a majority of administrators reported a lack of clarity regarding the numerous geographical requirements within the Clery Act (McNeal, 2007).

Victimization involving institutions’ students is incomplete as incidents are excluded if near, but not part of, the Clery geography of the school (Griffaton, 1993; Nobles et al., 2013). Only two years after the Clery Act was implemented, made the recommendation that crime statistics be based on student victimization and not by the seemingly arbitrary geographical boundaries.

The Clery Act has been criticized in producing the unwanted outcome of “incentivizing institutions to find ways around reporting” (Ahn, 2010, p.532). Ahn continued the critique by asserting the consequences for noncompliance were not severe enough to deter intentional
underreporting. Contrastingly, Gregory and Janosik (2006) asked senior housing officials about their perceptions of administrators hiding crime statistics. They found only 8% of respondents believed administrators were actively and intentionally hiding crime data, which the researchers believed to be a high level of confidence that Annual Security Report information was being provided accurately and appropriately.

In my current study, any finding in support of the original hypotheses will add to this body of research about the importance of accurate information. If potential students and their families are using Clery Act data as part of the college choice process, administrators have an ethical duty to effectively comply.

**Impact**

Determining the impact made by the Clery Act has been a challenge to researchers and only a few published studies include an examination of student behavior. The literature available is largely supported by data from self-reports rather than observed behaviors. The multifaceted purpose of the Clery Act presents another challenge to examining impact. My study can add to the knowledge of how the Clery Act truly impacts measurable outcomes such as application quantities and yield rates.

The Clery Act legislation seeks to provide consumers with accurate information; it also attempts to serve those constituents by prompting administrators and campus law enforcement to create safe and secure environments. However, studies have shown that campuses appear to be quite safe when compared to surrounding communities and our society as a whole (DOE, 2001; Janosik & Gehring, 2003; Nobles et al., 2013). The majority of
publications provide insight into individuals’ awareness of the Clery Act while others sought perceptions of the impact to safety and security.

Awareness

Janosik and Gehring (2003) claimed that, overall, students are not aware of the Clery Act despite efforts from institutions of higher education to increase visibility and relevance. Of the participants in one study, made up of current students, only 27% were aware of the Clery Act and only 22% reported reading the Annual Security Report specific to their institution. A number of additional quantitative studies have reinforced the findings that few students are aware of the Clery Act and the associated published crime statistics (Janosik, 2001; Janosik & Gehring, 2001; Janosik & Gehring, 2003; Woodhams, 1999). These studies are complemented by Janosik (2004) who found parents did not possess a higher level of awareness of the Clery Act and that few parents reported using campus crime information in the college choice for their student. Janosik’s study in 2004 included the findings that if the family had been victimized by crime, 11% reported using crime information. Comparatively, 3% of families without such victimization reported using crime information to influence college choice (Janosik, 2004).

There have been additional qualitative and mixed-method studies which sought to explore student awareness of the Clery Act (Aliabadi, 2007; Kerkhoff, 2008; Poole, 2014). The findings in these studies only support the aforementioned assertions that few students report awareness or knowledge of the Clery Act.

In one study, researchers concluded that students at small, private schools are more likely to have read the literature provided by the institution (Janosik & Gehring, 2003).
Furthermore, Janosik (2001) found that men were more likely than women to read the literature. However, another study conducted at a private, faith-based institution stated that students were, on the whole, unaware of the Clery Act and failed to use crime statistics to choose an institution of higher education (Poole, 2014).

Gregory and Janosik (2006) found that senior residence life and housing professionals showed a relative lack of knowledge of the Clery Act and its implications for practice. These professionals were unaware of their institution’s compliance with the Clery Act’s requirements during student admissions processes or even if the Annual Security Report was distributed to their students (Gregory & Janosik, 2006).

The scope of my study is broad as it encompasses all private, four-year colleges and universities in the United States. Additionally, awareness of issues involving college campuses and crime is subject to change as the public discourse changes. Many of the aforementioned studies were prior to major events such as the Virginia Tech shootings, the Penn State football scandal involving alleged sexual abuse, or the White House task force aimed at helping protect students from sexual assault on college campuses.

Safety and Security

Researchers have repeatedly proclaimed that the Clery Act, from the perspective of a variety of stakeholders, has done little to directly reduce crimes on campuses (Gregory & Janosik, 2006; Janosik, 2004; Janosik & Gehring, 2003; Janosik & Gregory, 2009). Senior residence life staff were asked about their experience with the Clery Act and found that only 5% of respondents perceived a reduction in crime, though 54% perceived an improvement in crime reporting (Gregory & Janosik, 2006). These findings were supported by a study three years
later by the same researchers. Senior student affairs officers were asked if the Clery Act has effectively reduced crime at their institutions and only 5% indicated it had done so (Janosik & Gregory, 2009).

Perceptions from campus law enforcement indicate the Clery Act has not influenced behavior or crime, but has had other positive effects. The Clery Act has been shown to have minor positive effects on law enforcement practices specifically relating to accurately reporting the crime on campus. Additionally, the Clery Act has been credited with positively impacting educational programs and services (Janosik & Gregory, 2003). Furthermore, a different study by the same researchers indicated that these educational programs and services were perceived to positive impact student behavior regarding personal protection (Gregory & Janosik, 2006). Janosik (2001) found that over 40% of women respondents changed their behavior relating to protecting themselves and their property due to the educational information that was made available to them. Comparatively, 21% of men had reported a change in behavior based on the same materials (Janosik, 2001).

Administrators, law enforcement officers, and other higher education professionals may be motivated to focus on improving safety and security if it is found that crime statistics play a role in the college choice process. For those institutions that are heavily enrollment-driven, decision-makers on campus are likely to be sensitive to those variables that can influence recruitment and matriculation. At the time of these other studies, the Clery Act was not perceived to have an impact on crime, safety, or security. The higher education field may need to revisit those perceptions as time progresses.
Positive Influence on Administration

While much of the literature on the Clery Act provides insights into its shortcomings and related issues, many of those same publications posited its positive impact to institutional administration. The Clery Act has been described as a symbolic form of legislation and one which may lead to a positive impact on campus safety and security, but it is not a one-stop solution to ending campus crime. Instead, the desired positive impact can occur through an increased clarity on guidelines and requirements as well as a continued commitment from administrators, campus law enforcement, and staff (Fisher et al., 2002; Gregory & Janosik, 2002; McNeal, 2007).

In order to effectively comply with the Clery Act, institutions of higher education will have to rely on a collective effort of administrators and staff across campus (Gregory & Janosik, 2002; McNeal, 2007; Richardson, 2014; Talesh, 2007). Collaborations across campus constituents, as recommended by Gregory and Janosik (2002), may lead to better compliance and to creating safer campuses. Specifically, senior student affairs officers have reported an enhanced level of collaboration because of the Clery Act (Gregory & Janosik, 2002; Talesh, 2007).

Multiple publications have claimed that a positive outcome of the Clery Act is that it encourages transparency and increased discussion among institutional administrators as well as with the campus community (Fisher et al., 2002; Talesh, 2007). However, though it may be encouraged, such transparency is not always reached in an accurate and precise manner due to the aforementioned compliance issues as well as the maligned structures within the Clery Act (Nobles et al., 2013).
The theme of campus safety and security has been prominent throughout the review of literature. As a stated priority, not only within the Clery Act’s goals, but among college administrators and law enforcement officers, striving to provide and improve a safe environment is a positive influence from the Clery Act. Regularly, college administrators have been encouraged to review services, programs, and educational efforts regarding victimization based on the research done on the Clery Act (Janosik & Gregory, 2009; Nobles et al., 2013).

Crime and Violence on College Campuses

The murder of Jeanne Clery may have been the impetus to the crime awareness legislation now known as the Clery Act, but college campuses have been subject to many other incidents of crime and violence. Two of those tragedies were described earlier in this study including an incident in 1987 at Clarkson University and the multiple homicide at the University of Florida in 1990, (Greene, 1988; Kalette, 1990).

Violent crimes, such as murder, have been reported to be only a remote possibility on college campuses with the average institution experiencing such an event once every 353 years (Cornell, 2010). Furthermore, the reported rate of homicide away from a college campus is 28 times higher than on a college campus (Nicolleti et al., 2010). These statistics seems to be forgotten, however, when violence occurs on campus and the public resorts to a more reactive response with demands of colleges and universities to remedy any potential for such acts.

While acts of murder and other severe violence are considered to be anomalous, the subsequent ripple effects are quite real and far-reaching (Nicolleti et al., 2010; Wilcox, Jordan, & Pritchard, 2007). As described by Patton and Gregory (2014), institutional administrators are
faced with the challenging task of providing safety and security for students and employees while promoting an open and unrestricted college environment.

According to a report from the U.S. Bureau of Justice Statistics (2008), for campuses with a population greater than 2,500, the reported rate of violent crime was 62 per 100,000 students as compared to the national rate of 466 per 100,000 persons (Cornell, 2010). The crime rates on college campuses are much lower than the national crime rate, but the notoriety and infamy that accompany an act of severe violence, mass shooting, or other high-profile incident create challenges for administrators.

Throughout the history of higher education in the United States, institutions have experienced a number of high-profile cases that have resulted in paradigmatic shifts in the campus culture. Social movements, such as demonstrations against the Vietnam War and the Civil Rights Movement, have served as catalysts for riots, and thus crime, on campuses. By the 1980s and 1990s, the crime on college campuses were no longer viewed as part of social movements. The most notable campus crimes in the modern era have included active shooters and mass murders, hazing rituals, and sexual misconduct. These incidents have occurred at a variety of institutions whether large, small, rural, urban, private, or public. Recently, violence and the subsequent response from administrators have generated attention in the media and among policy-makers and leaders in the higher education arena (Gregory & Janosik, 2006; Nicolleti et al., 2010; Wilcox et al., 2007).

Active Shooters and Mass Homicides

One example of campus violence in the modern era, and perhaps the most notable, occurred at Virginia Polytechnic Institute and State University on April 16, 2007. That morning,
a student took the lives of two others in a residence hall before opening fire in a building where classes were in session. In total, the student killed 32 other members of the Virginia Tech community, wounded another 23, and ultimately took his own life (Virginia Tech Review Panel, 2007). The incident received a significant amount of media coverage and sparked debate about numerous policies regarding campus safety, gun control, and institutional response to concerns over mental health (Nicoletti et al., 2010). In response, the governor of Virginia commissioned a panel to analyze the incident including the events leading up to the shootings, the handling of the incidents by university officials and campus safety officers, and the services provided afterwards (Virginia Tech Review Panel, 2007).

The following year, another active shooter situation occurred at Northern Illinois University. The NIU alumnus killed five people, injured 18 others, and took his own life (Nicoletti et al., 2010). Additionally, in 2008, a student at Louisiana Technical College killed two other students and then herself in a campus classroom (Cornell, 2010). By the end of 2008, active shooters and mass murders felt to be all too common on the college campus (Nicoletti, 2008).

Other campus shootings have included a 2002 incident at the University of Arizona where three instructors were killed and then the student killed himself. Allegedly, the student was angry due to his failing grades (Cornell, 2010; Holguin, 2002). In 2003 at Case Western Reserve University, a former student killed one person and wounded two others during a seven-hour standoff. Two students at Shepherd University were shot and killed by their father in 2006, who in turn took his own life. At the University of Washington in 2007, a student and instructor were shot and killed by an estranged ex-boyfriend. The murders came after the
student obtained a restraining order against him. And in 2009, a student killed a fellow classmate and himself at Henry Ford Community College. In each of these incidents, the shooter had demonstrated mental illness in one form or another (Cornell, 2010). Compounded with the extensive report after the Virginia Tech massacre, these incidents contributed to the shift in focus from individual responsibility to institutional duty.

These examples of tragic violence notwithstanding, students have been found to be six to ten times safer on campus rather than off campus (Volkwein, Szelest, & Lizotte, 1995). While the general and broad category of assault was found to be the most common for college campuses, studies have reported mixed findings. Specifically relating to more severe forms of assault, the rate of sexual assaults on campus was 1.4 times higher than off campus, while the rate of aggravated assault was 4.5 times higher off campus (Fisher et al., 1998).

**Hazing**

The modern-day college campus is not subject to violence solely from active shooters who have demonstrable mental illness. According to Hollman (2002), “Since 1990, more deaths have occurred on college and university campuses as a result of hazing, pledging, and initiation accidents, and fraternal alcohol-related incidents than all recorded history of such deaths” (p. 11). A national survey of student athletes was conducted in the 1998-1999 academic year by the National Collegiate Athletic Association and Alfred University. The researchers found that 79% of student athletes were subject to some form of hazing though 60% of those chose not to report incidents of hazing (Alfred University, 1999).

In October of 1999, the hockey team at the University of Vermont hosted an initiation party where rookie members of the team were hazed. The acts of hazing included demoralizing
behaviors, underage drinking, and forced fondling of genitalia (Nicoletti et al., 2010). A more recent case of hazing, which resulted in a student’s death, occurred in 2012. Following a Florida A&M University football game on November 19, a student was hazed by the university’s marching band and ultimately died due to the injuries sustained. The resulting criminal case was one of the largest in history based on a hazing death when 11 individuals were charged with felonies and two with misdemeanors (Brown, 2012). This was the third high-profile hazing incident in which members of the Florida A&M marching band were involved in physical beatings of new members (Hollman, 2002).

While the secrecy surrounding hazing makes it inherently difficult to effectively address or control, the increase in student death and injuries attributed to hazing should result in action by administrators on campus (Hollman, 2002). Hazing is not unique to athletic teams or Greek organizations, rather, it occurs among marching bands, spirit organizations, military organizations, and work groups (Hollman, 2002). However, hazing is not a crime or disciplinary referral that is required to be reported by the Clery Act. If other behaviors, such as underage drinking, aggravated assault, or murder, are connected to an act of hazing, those statistics would be recorded while the hazing would not.

Sexual Misconduct

In a report made in 2010, Lombardi found systemic problems with how institutions of higher education handle reports involving sexual assault. Additionally, the researcher reported that institutional data submitted in compliance with the Clery Act indicated far fewer instances of sexual assault than what was found in the yearlong study (Lombardi, 2010). Sexual misconduct, sexual violence, and sexual assault has been described as a persistent crime facing
college students and it has been called the biggest challenge to campus safety (Fisher et al., 2000). In a study from 2000, Fisher and colleagues determined that 2.8% of women will be victimized by an attempted or completed rape during any given academic year. A report from 2007 indicated no significant decrease in the prevalence of rape in the previous 15 years and only 16% of all sexual assaults in the United States and only 12% of sexual assaults on college campuses were reported to law enforcement (Kilpatrick, Resnick, Ruggiero, Conoscenti, & McCauley, 2007). In a study done in 1987, researchers determined that a significant proportion, 27.5%, of college women reported experiencing incidents of attempted or completed sexual assault (Koss, Gidyca, and Wisniewski, 1987). Due to its high prevalence, but low reporting, sexual assault has been described as an epidemic against women (Nicoletti, 2010).

Sexual assaults and institutional response to such incidents has been part of the public discourse in recent history. As recently as July 3, 2016, the Obama administration has charged institutions of higher education to sufficiently pursue investigations into sexual assault allegations and appropriately punish those found responsible (Eilperin, 2016). This comes after the public outrage due to a six-month sentence for a former Stanford student who was found guilty of sexually assaulting an unconscious woman at a party (Fantz, 2016).

Students’ College Choice

Numerous publications have indicated or concluded an institution’s reputation is highly related to its selectivity and recruitment of students (Conard & Conard, 2001; Cook & Zallocco, 1983; Maguire & Lay, 1981). While selectivity provides a context from the perspective of the institution, determining an individual’s desire to attend a specific institution provides additional
context for this research project. Based a study in 2001, researchers asserted that curriculum rigor and individualized attention from faculty were the best predictors for a student’s desire to attend an institution. However, an institution’s academic reputation was found to be based on rigor and individual attention as well as the social/cultural activities at the institution (Conard & Conard, 2000, 2001). These findings partially support research that found social/cultural activities as a primary predictor of desire to attend (Bowers & Pugh, 1973; Cook & Zallocco, 1983; Maguire & Lay, 1981).

In the time that these latter studies were conducted, the Clery Act was not yet in existence. The primary goal of the Clery Act, though, directly relates to both institutional reputation as well as the individual’s desire to attend (Janosik, 2001). As shown below, potential students make evaluations and decisions based on the information that is available to them. Information made available and shared in an institution’s Annual Security Report may influence both academic reputation as well as the social/cultural environment.

A review of the research and literature regarding college choice processes resulted in two primary categories, both of which are based on student perspectives. The first thematic category is college choice as a process. The second thematic category involves college choice within consumer decision framework.

Choice as a Process

Choosing to attend a specific institution of higher education is a complex interaction of numerous variables and influences. From type of institution, location, governance, and mascot, the wide-range of choices presents its own unique challenge to the decision-making process. Hossler and Gallagher (1987) define college-choice as a process involving three stages:
predisposition, search, and choice. Based on the goals of this study and the previously explored literature regarding the Clery Act, specific interest is directed to the latter two phases of this process.

The search phase described by Hossler and Gallagher (1987) applies to this proposed study in that during this phase, information is collected from the institutions in which the student is interested including the information about crime associated with the institutions’ Annual Security Reports (Janosik, 2001; Nora & Cabrera, 1992). Nora and Cabrera (1992) expanded on this framework and as a result of their study, identified five factors which directly impact the search phase. Those factors include educational aspirations, occupational plans, family socioeconomic status, institutional qualities, and student ability. During this stage of the college-choice process, students and families begin to actively engage with potential institutions which may include visiting campus, securing catalogs and institutional literature, and speaking with informal sources of information such as acquaintances and friends who are perceived to possess applicable knowledge or experiences (Cabrera & La Nasa, 2000). The student perspective and expectations regarding quality, campus life, major/degree availability, and personal/family finances primarily contribute to their own matriculation at any given institution (Choy & Ottinger, 1998; Hossler, Schmit, & Vesper, 1999; Tinto, 1993).

The last phase from Hossler and Gallagher (1987) involves the process of choice. This stage involves evaluating and synthesizing the information found in the previous search phase and then initiating the process of applying and matriculating (Hossler & Gallagher, 1987; Nora & Cabrera, 1992). During this phase, the student continues to amass information with varying degrees of formality from catalogs, staff, and counselors. It is in this part of the process that
the quality of information acquired plays a key role in the accuracy evaluation process and resulting decisions (Nora & Cabrera, 1992). Janosik (2001) conducted a study to determine how data required by the Clery Act was used by students in their choice of institution, which is the last phase presented by Hossler and Gallagher. That study was particularly focused on crime statistics as part of the information-gathering done by potential students. Janosik found that only 29% of respondents were aware of the Clery Act and only 25% of study participants recall receiving information about crime statistics (Janosik, 2001).

Based on a study in 1998, 63% of participating students reported that their choice of institution was based on school reputation (Choy & Ottinger, 1998). A couple of years later, Conard and Conard (2000) found supporting data to confirm Choy and Ottinger’s (1998) assertion that an institution’s academic reputation is critical in the college selection processes. Conard and Conard (2001) followed up a year later with the claim that while reputation may be critical, not all factors that define reputation contribute to a student’s desire to attend. Specifically, from the 2001 study, social and cultural dimensions of an institution contribute to academic reputation, but not student desire to attend (Conard & Conard, 2001). In light of the Clery Act research that has already been explored, crime and crime statistics were conspicuously missing from each of these studies and from their definitions of reputations.

Choice as a Consumer

The consumer decision framework has changed and adapted over time from a simple model of three sets (motives, alternatives, and decisions) to a complex exploration of each of these three stages to include sets of awareness, unawareness, consideration, inert, inept, choice of purchase/nonpurchase, and evaluation (Howard & Sheth, 1969; Narayana & Markin,
The sets described serve as categories for consumers’ discernment as one contemplates the ultimate decision to purchase or not to purchase. Higher education is considered a complex form of consumerism subject to such phases of a decision framework (Stephenson, Heckert, & Yerger, 2016). These sets within a consumer’s decision framework align with the phases previously explored from Hossler and Gallagher (1987). The consideration set within the consumer decision framework is analogous to the information search phase of Hossler and Gallagher’s (1987) model. Similarly, the choice set within the consumer decision framework is directly related to Hossler and Gallagher’s third phase also surrounding the actual choice of institution. The biggest difference exists between the two concepts in that the consumer decision framework utilizes sets as categorical descriptions whereas the Hossler and Gallagher model represents processes through which potential students navigate.

Consumer decision frameworks have been studied and applied to higher education, but only one project focused on the consideration and choice sets as part of a student’s decision to attend a specific institution of higher education (Stephenson et al., 2016). Using this framework, the researchers’ findings are consistent with others that assert the factors that drive college selection involve degree/major evaluation, price, size, location, and campus environment (Stephenson et al., 2016). Similar to the other studies explored here, Stephenson Heckert, and Yerger (2016) did not specifically address the perceptions or realities of campus crime in their description of campus environment.
Institutional Characteristics

Considering the complexity of college choice, institutional characteristics continue to be prominent in the literature. In order to include the applicable variables into the regression model later in the study, various institutional characteristics are explored here. Those characteristics include costs, financial assistance, expenditure per student, reliance upon tuition, and ethnic demographics.

One of the most prominent themes of institutional characteristic in the college choice process is cost. The costs associated with attending school, both sticker price and opportunity costs, has been widely researched and has been found to be a significant institutional characteristic as it relates to the college selection process (Corman & Davidson, 1984; DesJardins, Ahlburg, & McCall, 2006; Dynarski, 2000; Ehrenberg & Sherman, 1984; Heller, 1997, 1999; Jackson & Weathersby, 1975; Kane, 1994; McPherson & Schapiro, 1991; Pampaloni, 2010; Parker & Summers, 1993; St. John 1990; Teirney, 1980, 1982). The total cost of attendance, which includes tuition and fees, has been included as an independent variable in order to include its influence in the model.

Financial assistance then becomes directly associated with the costs of attending a college or university. As the costs, both opportunity and out-of-pocket, of higher education have increased, so has the sensitivity to financial assistance. The role of financial assistance in the college selection process has been found to have a statistically significant impact on matriculation (DesJardins, Ahlburg, & McCall, 2006). The 2006 study concluded that if a student receives less financial aid than expected, it will have a negative effect on the student’s
choice to enroll. The average financial aid amount has been included in the model to account for its ability to impact and predict the recruitment variables application quantity and yield rate.

As an institutional characteristic, financial assistance has not been the only form of support that has an impact on recruitment of potential students. Based on a study in 2003, academic support measured by expenditure per student was found to be a significant influence on student to attend specific institutions of higher education (Letawksy, Schneider, Pedersen, & Palmer, 2003). In order to account for its influence on the study’s dependent variables, expenditure per student was included in this study’s model.

Institutions of higher education are highly stratified in their reliance upon tuition revenue. This has been due to a variety of things including differences in endowments and public appropriations. Research has shown that affluent universities continue to use that advantage while disadvantaged institutions fall further and further behind in the competition for a finite amount of resources. A study published in 2015 posited that a revenue stream that is diversified in its sources, specifically apart from tuition and fees, can lead to more effective recruitment of students. Diversified sources of revenue allow for lowered costs without decreasing educational expenditures (Taylor & Morphew, 2015). Institutional reliance upon tuition as a source of revenue was included in this study to account for this as a predictor for recruitment.

Institutional characteristics in the form of student body demographics, specifically in the form of ethnicity, have been shown to affect price-responsiveness (Ehrenberg & Sherman 1984; Kane 1994; Light & Strayer, 2002; Tobias, 2002). It is important, then, to control for that variable in the model. In order to successfully control for the variable as an institutional
characteristic, variables indicating the percentage of total enrollment for each major ethnicity (American Indian, Asian, Black, Latino, White, and Multi) were included in the model.

Summary

College choice processes are navigated each year by a multitude of individuals and their families. The information mandated by the United States federal government per the Clery Act legislation is designed to assist those potential students to become informed consumers of the services, goods, and products that are encapsulated by an institution of higher education. The Clery Act has its share of criticisms, but underlying each study is the desire for institutions of higher education to be as safe and secure as possible. The Clery Act charges institutions with providing information regarding crime statistics and policies, but it is rife with problematic structures. Information provided to potential students per the Clery Act’s requirements acts a variable during students’ college choice. Furthermore, the current state of literature provides insight into the perceived effectiveness of the Clery Act primarily from self-reported data. One limitation of many of the studies referenced above is that students and parents surveyed had already made the decision to attend the given institutions. Participants’ self-report of whether or not they considered crime statistics as part of their college-choice processes fails to capture those who may have and, as a result, chose to attend an alternative institution.

The studies from Conard and Conard (2000, 2001) explore academic reputation and place upon it a substantial level of importance as it relates to effectively recruiting students. Image and reputation were found to be significant factors in college choice from a consumer decision framework as well (Stephenson et al., 2016). These findings add credibility to the concerns about the Clery Act’s purpose and the perception that it is antithetical to institutional
pressures to create and maintain a positive image and respectable reputation (Ahn, 2010; Carter, 2002).

While the literature involving student college choice has not changed drastically since the 1980s, the Clery Act has. Its introduction, implementation, and ongoing revision represent new variables in the information gathering phases involved in choosing an institution of higher education. The studies conducted about the impact of Clery on the college-choice processes do not involve students who chose to not attend a certain school and instead were surveyed after attending a specific school (Janosik, 2001, 2004; Janosik & Gehring, 2001; Janosik & Gehring, 2003; Woodhams, 1999).

Within the decision-making processes as explained by Hossler and Gallagher (1987), potential students undertake involves gathering and evaluating information. However, research findings would indicate that crime in the early 2000s, crime statistics were not considered salient in that phase (Janosik, 2001, 2004).

Many institutional characteristics impact that decision making process. In order to account for their predictive properties of applications and yield, numerous institutional characteristic variables were explored and included in this study.

While not perfect, as the explored research has shown, Clery Act data included in institutional Annual Security Reports is still the best available regarding crime on campus for all institutions which received federal financial aid. As Fisher et al., (2002) stated, “the intentions of the Clery Act were a noble step toward providing the campus community with information” (p. 89). Much of the Clery Act research focused heavily on perceptions and self-reporting, not on behaviors. This proposed study, which is to determine if Clery Act data can predict
applications and yield, will be a unique examination and may provide new information to administrators and policy makers. The existing literature of the Clery Act is largely redundant as numerous studies conducted have shared many of the same findings. The unique nature of this proposed study will fill a gap in the body of academic research.
CHAPTER 3

METHODS

The intent of this study was to investigate the relationship between a campuses’ crime data and its ability to recruit and enroll students. Based on the purpose of the Clery Act, the current hypothesis was that an inverse relationship exists between crime statistics and the two dependent variables. The purpose of this study was to determine if institutional Clery Act data can effectively and statistically significantly predict the respective institutional application pool and yield rate. The following research questions guided the study:

1. Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the quantity of applications at private, four-year colleges and universities?

2. Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the yield rates at private, four-year colleges and universities?

The nature of these research questions is predictive and correlational and, as such, a quantitative method was used. The concepts of applications, yield rate, and crime statistics can all be quantified. According to Creswell (2014), quantitative approaches should relate variables in questions or hypotheses as well as employ statistical procedures to understand data. Creswell (2014) stated, “if the problem calls for...understanding the best predictors of outcomes, then a quantitative approach is best” (p. 20).
Sample

Data from the Department of Education as well as the Delta Cost Project for this proposed study is limited to the year 2013 as the most recent data available. The sample for this study consists of all private, four-year and higher colleges universities that are compliant with reporting crime statistics as required by the Clery Act in the year 2013. The population to which any analyses will be generalized are the same institutions across time.

Data Collection

The study utilized secondary data sources from the Department of Education (DOE), specifically the Campus Security portal, and from the Delta Cost Project. The DOE Campus Security portal served as the source for Clery Act data. The Clery Act data were downloaded in SPSS formats and includes specific data from institution to institution. The data from the Delta Cost Project were also downloaded in SPSS formats. Both databases include an institutional ID number which will allow for one dataset in SPSS that includes all desired variables. The data are not proprietary and are considered public information.

Essential to the study was a reliance upon data found in an institution’s Annual Security Report. If an institution did not submit those data to the Department of Education, they were not part of the study. Secondary data meant that I am subject to any limitation in the data.

After the desired data were collected from these sources, it was cleaned and compiled into one dataset. Clery Act data and Delta Cost Project data were aligned based on institutional identification, effectively adding variables into one dataset to be used in analyses.

Variables

A complete listing of all variables used can be found in Table 1, below.
Independent Variables

The independent or predictor variables throughout this study come from the data reported as part of an institution’s compliance with the Clery Act. The data from the Department of Education are reported as variables in the following formats:

- **Criminal offenses** – on campus
- **Criminal offenses** – on campus, student housing
- **Criminal offenses** – non-campus
- **Criminal offenses** – public property
- **Hate offenses** – on campus
- **Hate offenses** – on campus, student housing
- **Hate offenses** – non-campus
- **Hate offenses** – public property
- **Arrests** – on campus
- **Arrests** – on campus, student housing
- **Arrests** – non-campus
- **Arrests** – public property
- **Referrals for disciplinary action** – on campus
- **Referrals for disciplinary action** – on campus, student housing
- **Referrals for disciplinary action** – non-campus
- **Referrals for disciplinary action** – public property

Criminal offenses may be categorized as murder and nonnegligent manslaughter, negligent manslaughter, rape, fondling, incest, statutory rape, (for years 2013 and earlier,
sexual offenses are categorized as either forcible or nonforcible), robbery, aggravated assault, dating violence, domestic violence, stalking, burglary, motor vehicle theft, and arson. Hate offenses may be categorized as any of the aforementioned criminal offenses as well as larceny (theft), simple assault, intimidation, and destruction of property. Both arrests and referrals for disciplinary action may be categorized as liquor law, drug abuse, or weapon violations (FBI, 2004; DOE, 2011, 2014). The subsection of geographic location “on campus, student housing” only defines the number of on campus reported violations have occurred in student housing. The geographic label of “on campus” includes its residence hall subsection in its data. That creates up to 114 unique variables to examine an institution’s total number of reported incidents that is part of its Clery data.

Utilizing such a high number of independent variables would result in near meaningless findings. In order to better answer the research questions, this study aggregated these categories into one predictor variable: total incidents (INCIDENTS_TOT).

As stated in the research questions, the primary predictor variable that is applicable to this study are the total number of incidents that an institution discloses in its Annual Security Report as required by the Clery Act. In addition to this predictor, a number of other independent variables are included in the model. These other independent variables are institutional characteristics that research has shown to be influential in the college-choice process. All variables and their abbreviated codes can be found in Table 1, below.
**Dependent Variables**

Based on the two research questions, the dependent variables explored in this proposed study will include numbers of applications and yield rate. Yield is defined as a ratio of admitted students to enrolled students. Those two dependent variables are defined:

- Number of applicants (APPS)
- Yield (ratio of enrolled total to admitted total) (YIELD).

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Abbreviated Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Applicants</td>
<td>APPS</td>
<td>Dependent variable – total number of applications received</td>
</tr>
<tr>
<td>Yield</td>
<td>YIELD</td>
<td>Dependent variable – ratio of total of admitted students to the total of enrolled admitted students</td>
</tr>
<tr>
<td>Total Number of Incidents</td>
<td>INCIDENTS_TOT</td>
<td>Predictor variable</td>
</tr>
<tr>
<td>Average Cost of Attendance</td>
<td>COST_TOT</td>
<td>Independent variable – in dollars</td>
</tr>
<tr>
<td>Average Total Financial Aid Award</td>
<td>FINAID_TOT</td>
<td>Independent variable – in dollars</td>
</tr>
<tr>
<td>Total Expenditure per Student</td>
<td>EXPEND_STU</td>
<td>Independent variable – in dollars</td>
</tr>
<tr>
<td>Reliance upon Tuition for Revenue</td>
<td>TUITION_REL</td>
<td>Independent variable – the net tuition share of operating revenues from basic revenue streams; investment returns; sales and services of educational activities; and auxiliary enterprises</td>
</tr>
<tr>
<td>Research/Doctoral Institution</td>
<td>DC_RESEARCH</td>
<td>Independent variable – dummy coded variable to indicate Carnegie Classification</td>
</tr>
<tr>
<td>Master’s Institution</td>
<td>DC_MASTERS</td>
<td>Independent variable – dummy coded variable to indicate Carnegie Classification</td>
</tr>
<tr>
<td>Bachelor’s Institution</td>
<td>DC_BACH</td>
<td>Independent variable – dummy coded variable to indicate Carnegie Classification</td>
</tr>
<tr>
<td>Specialized Institution</td>
<td>DC_SPECIAL</td>
<td>Independent variable – dummy coded variable to indicate Carnegie Classification</td>
</tr>
<tr>
<td>Total Number of Students Enrolled</td>
<td>SIZE</td>
<td>Independent variable – total number of students enrolled</td>
</tr>
<tr>
<td>Enrollment Identified as American Indian</td>
<td>PERC_AI</td>
<td>Independent variable – ratio of American Indian students to total enrollment</td>
</tr>
<tr>
<td>Enrollment Identified as Asian</td>
<td>PERC_ASIAN</td>
<td>Independent variable – ratio of Asian students to total enrollment</td>
</tr>
<tr>
<td>Enrollment Identified as Black</td>
<td>PERC_BLACK</td>
<td>Independent variable – ratio of Black students to total enrollment</td>
</tr>
<tr>
<td>Enrollment Identified as Latino</td>
<td>PERC_LATINO</td>
<td>Independent variable – ratio of Latino students to total enrollment</td>
</tr>
<tr>
<td>Enrollment Identified as White</td>
<td>PERC_WHITE</td>
<td>Independent variable – ratio of White students to total enrollment</td>
</tr>
<tr>
<td>Enrollment Identified as Multi</td>
<td>PERC_MULTI</td>
<td>Independent variable – ratio of Multi-ethnic students to total enrollment</td>
</tr>
</tbody>
</table>
Data Analysis

To best answer the question of prediction as well as the nature of the variables, this study used Ordinary Least Squares (OLS) regression as the primary analytical tool. The term OLS refers to a method of determining the best fit of the model, in this case a linear relationship, within a multiple regression analysis (Field, 2013). Cohen, Cohen, West, and Aiken (2003) describe multiple regression as useful in practical prediction problems where one’s goal is to predict an outcome based on previously collected data. Moreover, the use of OLS as the primary analysis allows for simultaneous exploration of influences from multiple factors or independent variables. The end product of an OLS analysis is an equation which represents a best fit model for predicting a dependent variable based on several independent variables. That model may then be used to predict application and yield rate information should the independent variables change.

A specific method of OLS was selected to guide the data analysis. While this study was largely exploratory, utilizing stepwise regression is still not preferred as the models are chosen by the computer based on mathematics (Cohen, Cohen, West, & Aiken, 2003; Field, 2013). Doing so removes decision-making and interpretation from the researcher regarding priority, logical connections, and relevance (Cohen et al., 2003). To avoid this potential issue, forced entry regression will be used. This method relies on sound theoretical reasons in choosing specific predictors and avoids the influence by random variation in the data (Field, 2013).

Assumptions in OLS

Assumptions were tested to determine if any violation occurs. The first is that the model is that the dependent variable is linearly related to the independent variables (Field,
In my study, this assumption was violated and a robust analysis using bootstrapping was used to correct for this violation. The second assumption is that the independent variables have been correctly specified (Cohen et al., 2003). The third, and closely related, is that the independent variables are perfectly reliable (Cohen et al., 2003).

The next assumption relates to variance and involves homoscedasticity or the homogeneity of variance. This assumption means the variance associated with the dependent variable is constant at all levels of the independent variables (Cohen et al., 2003; Field, 2013).

The last two assumptions involve residuals. The first of which is the assumption of independence. This assumption means that errors that exist in the model are independent, or unrelated, to one another (Cohen et al., 2003; Field, 2013). The last assumption relates to the normality of residuals and means that for any value of independent variable, there are residuals around a regression line. Those residuals are assumed to be normally distributed (Cohen et al., 2003).

Data Inspection and Transformation

Upon initial observations of the data, several of the predictor variables had instances missing observation data including number of applications, rate of yield, sticker price of institution, average financial aid award, expenditure per student, tuition reliance, and institutional size. The criterion variable of the total number of incidents had no missing data. The study was then forced to respond to the missing data.

There are multiple options within SPSS to address missing data. Due to the nature of the data as unique and institutional specific, imputations were not used to address missing data. The sample size was quite large to begin with and casewise deletion for missing values
did not reduce the sample size to an undesirable number. By doing so, findings are based on true relationships within the data, not assumed due to imputation techniques.

Procedures to Review Bias in the Regression Models

In order to be able to generalize this study, the model was reviewed for bias by unusual cases from outliers or excessively influential cases (Field, 2013). Before conducting analyses, these procedures provided any deviant data points or cases. This study has multiple predictor variables for each of the dependent variables, number of applications and yield rate, and the following procedures were conducted for each of the predictor variables.

First was a visual review which included scatterplots of the predictor variables and the dependent, or outcome, variables. Any data point which appeared to depart from the other data points were then identified and tagged as potential unusual case.

Second was to examine the dataset based on standardized residuals and the expected normal distribution of $z$-scores. If the data point had a standardized residual outside an absolute value of 3 as they are considered a cause of concern in any given sample (Field, 2013). Additionally, the standardized residuals were examined to determine if more than 1% of the cases had an absolute value of 2.58 or greater as that indicates an unacceptable level of error.

The last procedure to review the dataset for unusual cases was to examine influential cases. Several statistics were used to determine influence including Cook’s Distance as a measure of the overall influence of a single case on the whole model, Mahalanobis Distance, centered leverage values, and the standardized DFFit values (Field, 2013). Any value of one or greater was identified and tagged as a cause for concern. The decision to include these measures of influence in the study was to ensure that only the most extreme cases would be
identified as possible deletions from the dataset and thus eliminating the risk of removing valuable information.

Delimitations

Delimitations can be used to narrow the scope of a study and are controlled by the researcher (Creswell, 2014). The following delimitations will affect the way results may be generalized and findings interpreted:

- The crime statistics reported to the United States Department of Education, which will be used as part of this study, are not inclusive to institutions that do not receive federal financial aid (or Title IV).
- This proposed study will focus on private/independently governed and operations institutions categorized as four-year and above. The purpose of this specific focus is to provide insight for institutions that do not receive state appropriations and are dependent upon student enrollment to generate operation budgets.

Limitations

This study presented four primary limitations. The first limitation is the reliance upon secondary data to use throughout analyses. Because primary data collection is not part of the proposed study, the secondary data used may not be the best fit to answer the research questions. However, all data driving this proposed study is included in the annual Integrated Postsecondary Education Data System (IPEDS) report and Department of Education Clery statistics report.
The second limitation is the potential inaccuracy of institutional information regarding crime statistics. The first reason for this possible inaccuracy is that crime statistics are populated by the reports administrators receive of misconduct, crime, or disciplinary referrals. What is reported may not be truly indicative of the culture surrounding campus crime, safety, and security. The second reason for the possible inaccuracy is that past research has shown compliance with the requirements of the Clery Act is problematic either due to intentionally hiding information from the public or due to a lack of comprehension of requirements as was previously explored as part of the literature review.

The third limitation for this study is in the power of such a robust amount of information. Even with the aforementioned delimitations, it is likely that with such a large dataset, statistical significance will be found. This adds an increased level of importance of analyzing and understanding the corresponding effect size in addition to statistical significance.

The fourth, and final, limitation is found in the nature of behavioral sciences. Research that is conducted in the broad spectrum of behavioral science leads to weaker theories. As the number of possible causal factors increases, each has a higher level of uncertainty as representative in any given measure (Cohen et al., 2003). However, the use of OLS will allow for more simultaneous examination of the relationship from multiple factors, limiting the ambiguity of data analysis the behavioral sciences.
CHAPTER 4

RESULTS AND FINDINGS

As discussed in depth in Chapter 3, the sample for this study consists of all private, four-year and higher colleges universities that are compliant with reporting crime statistics as required by the Clery Act for the year of 2013. The data found in institutional Clery Act reports and institutional characteristics were analyzed to determine if crime statistics could statistically significantly predict the number of applicants and yield rates for the sample institutions. Data were collected from the Delta Cost Project and the Department of Education’s Campus Security portal. All data were downloaded into SPSS Statistics 24.0.0.0 for analysis. The results of the data analysis are presented in the following order:

1. Outlier and Influential Cases Analyses
   a. APPS dataset
   b. YIELD dataset

2. Descriptive Statistics
   a. APPS dataset
   b. YIELD dataset

3. Assumption Checking

4. OLS Analyses
   a. APPS dataset
   b. YIELD dataset
Outlier and Influential Cases Analyses

According to Field (2013), an additional manner in which to determine outlying cases is to examine the standardized residual scores. It should be expected that 95% of cases would fall between -1.96 and +1.96 of the z-scores, or 5% would fall outside that same range. Building on that same premise, 99% of cases should have a z-score which falls between -2.58 and +2.58 or conversely, only 1% outside of that range. Lastly, virtually all cases should have z-scores fall between -3.29 and +3.29.

The last step used to determine outlier and influential cases was to examine the Cook’s distance for each residual. The statistic of Cook’s distance considers the effect of a single case on the model as a whole (Field, 2013). Values greater than one have been suggested to be cause for concern, which will be used as a cut-off point in these analyses (Cook & Weisberg, 1982).

Applications Dataset

Table 2 includes any case from the applications dataset that requires additional evaluation to determine whether it should be included in the study. Those cut-off points include the standardized residuals that have an absolute value of 2.58 or greater.

We expect the applications dataset to have approximately 51 cases with z-scores with absolute value of more than 1.96, approximately 11 cases with z-scores with absolute value of more than 2.58, and no cases with z-scores with an absolute value greater than 3.29, based on the score distribution in a normally distributed dataset. By examining the standardized residual scores for possible outliers, a total of 18 cases fall outside the range of -3.29 to +3.29. The cases in the table are those outside of the 1% z-score range total 15.
Table 2

<table>
<thead>
<tr>
<th>Institution</th>
<th>Standardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nova Southeastern University</td>
<td>-6.35*</td>
</tr>
<tr>
<td>Brigham Young University, Provo</td>
<td>-5.09*</td>
</tr>
<tr>
<td>Long Island University CW Post Campus</td>
<td>-4.18*</td>
</tr>
<tr>
<td>Webster University</td>
<td>-4.00*</td>
</tr>
<tr>
<td>New York University</td>
<td>-3.91*</td>
</tr>
<tr>
<td>Embry-Riddle Aeronautical University, Daytona Beach</td>
<td>-3.75*</td>
</tr>
<tr>
<td>Saint Leo University</td>
<td>-3.10</td>
</tr>
<tr>
<td>Yeshiva University</td>
<td>-3.04</td>
</tr>
<tr>
<td>University of St. Thomas</td>
<td>-3.00</td>
</tr>
<tr>
<td>Duquesne University</td>
<td>-2.75</td>
</tr>
<tr>
<td>Brigham Young University, Idaho</td>
<td>-2.71</td>
</tr>
<tr>
<td>California Institute of Technology</td>
<td>-2.68</td>
</tr>
<tr>
<td>Southern New Hampshire University</td>
<td>-2.59</td>
</tr>
<tr>
<td>Boston University</td>
<td>2.58</td>
</tr>
<tr>
<td>Marquette University</td>
<td>2.62</td>
</tr>
<tr>
<td>Quinnipiac University</td>
<td>2.68</td>
</tr>
<tr>
<td>Campbell University</td>
<td>2.87</td>
</tr>
<tr>
<td>Hofstra University</td>
<td>2.89</td>
</tr>
<tr>
<td>Boston University</td>
<td>3.01</td>
</tr>
<tr>
<td>Hampton University</td>
<td>3.03</td>
</tr>
<tr>
<td>Houston Baptist University</td>
<td>3.07</td>
</tr>
<tr>
<td>Princeton University</td>
<td>3.90*</td>
</tr>
<tr>
<td>Boston College</td>
<td>3.91*</td>
</tr>
<tr>
<td>Baylor University</td>
<td>3.95*</td>
</tr>
<tr>
<td>University of the Pacific</td>
<td>4.03*</td>
</tr>
<tr>
<td>Stanford University</td>
<td>4.29*</td>
</tr>
<tr>
<td>Cornell University</td>
<td>4.38*</td>
</tr>
<tr>
<td>Brown University</td>
<td>5.00*</td>
</tr>
<tr>
<td>Tulane University of Louisiana</td>
<td>5.02*</td>
</tr>
<tr>
<td>Drexel University</td>
<td>5.05*</td>
</tr>
<tr>
<td>Northeastern University</td>
<td>5.20*</td>
</tr>
<tr>
<td>Fordham University</td>
<td>5.21*</td>
</tr>
<tr>
<td>St. John’s University, New York</td>
<td>10.91*</td>
</tr>
</tbody>
</table>

Note. N = 1021. * Denotes a case with a standardized regression score falling outside of the absolute value of 3.29.

To determine influential cases, both Cook’s and Mahalanobis distances were examined along with centered leverage values, and standardized DFFit values. Mahalanobis distances
have a chi-square distribution. Our analysis includes 16 predictor variables and if we choose an alpha level of .01 due to the size of our sample, the related critical value of the Mahalanobis distance was determined to be 32.00 (Field, 2013). Leverage values above three times the average \((3(k-1)/n)\), or .044, and standardized DFFit absolute values greater than 2.58 are suggested cut-off points to identify cases which may have undue influence on the model as a whole (Stevens, 2002). However, Cohen, Cohen, West, and Aiken (2003) recommend to limit the number of cases examined as outliers to the leverage values that have a natural break with the other leverage scores. In the APPS dataset, the leverage values have a large gap at .101. At that same point, a large gap exists in the Mahalanobis distance to the next case from 102.796 to 89.157. As Mahalanobis distance expresses the same information, but with different cut-off points, this study examined only those cases with values equal to or greater than 102.796 (Cohen, Cohen, West & Aiken, 2003). As with other standardized values, we expect to have a normal distribution of the standardized DFFit values with only 1% of our cases with values beyond -2.58 or +2.58 and no cases beyond -3.29 or +3.29.

Table 3 includes cases from the applications dataset which were determined to have a Mahalanobis distance of 102.796 or greater, cases with a leverage value equal to or greater than .101, or cases with a standardized DFFit value with an absolute value greater than 2.58. The table also presents the Cook’s distance for each included case for comparison.

Before limiting the cases based on the large gaps that exist for the largest values of Mahalanobis distance and leverage values, a total of 91 cases would have been included. Additionally, 46 of those cases had a leverage value equal to or greater than .044. However, limiting the number of cases to examine to a very small group is recommended to analysts
(Cohen, Cohen, West & Aiken, 2003). By limiting the cases to those above the large gaps in values, only seven cases will be examined as unduly influential cases on the model. Only one case, New York University, recorded a standardized DFFit score outside of two standard deviations (±2.58). That specific case had a large Mahalanobis distance (255.296), and a leverage score above the cut-off (.250).

Table 3

Influential Cases for APPS Dataset

<table>
<thead>
<tr>
<th>Institution</th>
<th>Mahalanobis Distance</th>
<th>Cook’s Distance</th>
<th>Centered Leverage Value</th>
<th>Standardized DFFit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacone College</td>
<td>473.48</td>
<td>0.01</td>
<td>0.46</td>
<td>0.31</td>
</tr>
<tr>
<td>Pacific Islands University</td>
<td>311.33</td>
<td>0.00</td>
<td>0.31</td>
<td>-0.26</td>
</tr>
<tr>
<td>Dell’Arte International School of Physical Theatre</td>
<td>288.31</td>
<td>0.01</td>
<td>0.28</td>
<td>0.43</td>
</tr>
<tr>
<td>New York University†</td>
<td>254.80</td>
<td>0.43</td>
<td>0.25</td>
<td>-2.64*</td>
</tr>
<tr>
<td>Yale University</td>
<td>173.28</td>
<td>0.02</td>
<td>0.17</td>
<td>0.61</td>
</tr>
<tr>
<td>Webb Institute</td>
<td>142.13</td>
<td>0.02</td>
<td>0.14</td>
<td>-0.61</td>
</tr>
<tr>
<td>Brigham Young University-Provo†</td>
<td>102.67</td>
<td>0.20</td>
<td>0.10</td>
<td>-1.83</td>
</tr>
</tbody>
</table>

Note. *Denotes a case with a standardized regression score falling outside of the absolute value of 2.58.
†Denotes a case that was already determined to be an outlier in previous analyses.

Ultimately, no cases were removed from the applications dataset. While a number of cases are considered outliers, no case had an unduly large effect on the regression analysis based on the Cook’s distance and standardized DFFit values. Stevens (2002) offered the advice that these types of cases do not require deletion.

Yield Rate Dataset

Table 4 includes any case from the yield rate dataset that requires additional evaluation to determine whether it should be included in the study. Those cut-off points include the standardized residuals that have an absolute value of 2.58 or greater.

We expect the yield rate dataset to have approximately 51 cases with z-scores with
absolute value of more than 1.96, approximately 11 cases with z-scores with absolute value of more than 2.58, and no cases with z-scores with an absolute value greater than 3.29, based on the score distribution in a normally distributed dataset. By examining the standardized residual scores for possible outliers, a total of 8 cases fall outside the range of -3.29 to +3.29.

Table 4

<table>
<thead>
<tr>
<th>Institution</th>
<th>Standardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabbinical College of Long Island</td>
<td>-5.80*</td>
</tr>
<tr>
<td>Bais Medrash Elyon</td>
<td>-5.61*</td>
</tr>
<tr>
<td>Palmer College of Chiropractic-Davenport</td>
<td>-5.25*</td>
</tr>
<tr>
<td>Trinity College of Nursing &amp; Health Sciences</td>
<td>-3.41*</td>
</tr>
<tr>
<td>Golden Gate University-San Francisco</td>
<td>-3.31*</td>
</tr>
<tr>
<td>Charles R Drew University of Medicine and Science</td>
<td>-2.77</td>
</tr>
<tr>
<td>Alice Lloyd College</td>
<td>-2.66</td>
</tr>
<tr>
<td>Adventist University of Health Sciences</td>
<td>-2.65</td>
</tr>
<tr>
<td>Universidad Central Del Caribe</td>
<td>-2.64</td>
</tr>
<tr>
<td>Ohio Christian University</td>
<td>2.65</td>
</tr>
<tr>
<td>Le Moyne-Owen College</td>
<td>2.65</td>
</tr>
<tr>
<td>Kentucky Wesleyan College</td>
<td>2.72</td>
</tr>
<tr>
<td>Central Baptist College</td>
<td>2.74</td>
</tr>
<tr>
<td>The College of New Rochelle</td>
<td>2.75</td>
</tr>
<tr>
<td>Goddard College</td>
<td>2.79</td>
</tr>
<tr>
<td>Spalding University</td>
<td>2.93</td>
</tr>
<tr>
<td>Allen College</td>
<td>2.93</td>
</tr>
<tr>
<td>Hodges University</td>
<td>2.94</td>
</tr>
<tr>
<td>St. Thomas University</td>
<td>2.95</td>
</tr>
<tr>
<td>Maharishi University of Management</td>
<td>2.99</td>
</tr>
<tr>
<td>Beacon College</td>
<td>3.04</td>
</tr>
<tr>
<td>Michigan Jewish Institute</td>
<td>3.06</td>
</tr>
<tr>
<td>Bard College at Simon's Rock</td>
<td>3.19</td>
</tr>
<tr>
<td>Robert Morris University Illinois</td>
<td>3.32*</td>
</tr>
<tr>
<td>Cooper Union for the Advancement of Science and Art</td>
<td>3.34*</td>
</tr>
<tr>
<td>Saint Joseph's College of Maine</td>
<td>4.06*</td>
</tr>
</tbody>
</table>

*Denotes a case with a standardized regression score falling outside of the absolute value of 3.29.

Following the same processes as the applications dataset, the yield rate dataset was examined for influential cases using Mahalanobis distance, Cook’s distance, centered leverage values, and the standardized DFFit values. Because the study uses the same predictor variables
for each dependent variable, the Mahalanobis distance and centered leverage values were consistent. The same logic was followed for the cut-off points for these two values. The values for Cook’s distance and the standardized DFFit were different in the yield rate dataset as those are influenced by the dependent variable.

Table 5 includes cases from the yield rate dataset which were determined to have a Mahalanobis distance of 102.796 or greater, cases with a leverage value equal to or greater than .101, or cases with a standardized DFFit value with an absolute value greater than 2.58. The table also presents the Cook’s distance for each included case for comparison.

Table 5

<table>
<thead>
<tr>
<th>Institution</th>
<th>Mahalanobis Distance</th>
<th>Cook’s Distance</th>
<th>Centered Leverage Value</th>
<th>Standardized DFFit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacon College</td>
<td>472.55</td>
<td>0.02</td>
<td>0.46</td>
<td>0.56</td>
</tr>
<tr>
<td>Pacific Islands University</td>
<td>311.33</td>
<td>0.16</td>
<td>0.31</td>
<td>1.59</td>
</tr>
<tr>
<td>Dell’Arte International School of Physical Theatre</td>
<td>288.31</td>
<td>0.05</td>
<td>0.28</td>
<td>0.85</td>
</tr>
<tr>
<td>New York University</td>
<td>254.80</td>
<td>0.02</td>
<td>0.25</td>
<td>0.55</td>
</tr>
<tr>
<td>Yale University</td>
<td>173.28</td>
<td>0.02</td>
<td>0.17</td>
<td>-0.58</td>
</tr>
<tr>
<td>Webb Institute</td>
<td>142.13</td>
<td>0.07</td>
<td>0.14</td>
<td>-1.09</td>
</tr>
<tr>
<td>Brigham Young University-Provo</td>
<td>102.67</td>
<td>0.00</td>
<td>0.10</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

None of the cases in this table were identified earlier as outliers. For similar reasons to the APPS dataset, all cases were chosen to remain as part of the yield rate dataset because only their Mahalanobis distance and leverage values were high. The respective Cook’s distance and standardized DFFit values minimized the concern these cases play on the model as a whole.

Descriptive Statistics

The primary purpose of this study is to determine if Clery data can effectively predict the application and yield rates for private institutions. To begin that process, the descriptive
statistics of the sample, which include both application and yield rate datasets, are below.

Frequency distributions can be found in Table 6 for size category, Carnegie classification, and geographical region of the sample. In the sample \((n = 1021)\), the most prevalent types of institutions are small \((n = 451, 45.1\%)\), bachelor’s institutions \((n = 440, 44.0\%)\), and residing in the mid-east states \((n = 220, 22.0\%)\). Descriptive statistics, including minimum, maximum, mean, and standard deviation, for the independent and dependent variables can be found in Table 7.

Table 6

**Characteristics of Sample**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institutional Size Category</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Small (&lt;1,000)</td>
<td>250</td>
<td>24.49</td>
</tr>
<tr>
<td>Small (1,000 – 2,999)</td>
<td>451</td>
<td>44.17</td>
</tr>
<tr>
<td>Medium (3,000 – 9,999)</td>
<td>246</td>
<td>24.09</td>
</tr>
<tr>
<td>Large (&gt;9,999)</td>
<td>74</td>
<td>7.25</td>
</tr>
<tr>
<td>Total</td>
<td>1021</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Basic Carnegie Classifications</strong></td>
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<td></td>
</tr>
<tr>
<td>Research Institutions</td>
<td>96</td>
<td>9.40</td>
</tr>
<tr>
<td>Master’s Institutions</td>
<td>298</td>
<td>29.19</td>
</tr>
<tr>
<td>Bachelor’s Institutions</td>
<td>439</td>
<td>43.00</td>
</tr>
<tr>
<td>Specialty Institutions</td>
<td>188</td>
<td>18.41</td>
</tr>
<tr>
<td>Total</td>
<td>1021</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Geographical Regions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New England (CT, ME, MA, NH, RI, VT)</td>
<td>105</td>
<td>10.28</td>
</tr>
<tr>
<td>Mid-East (DE, DC, MD, NJ, NY, PA)</td>
<td>228</td>
<td>22.33</td>
</tr>
<tr>
<td>Great Lakes (IL, IN, MI, OH, WI)</td>
<td>171</td>
<td>16.75</td>
</tr>
<tr>
<td>Plains (IA, KS, MN, MO, NE, ND, SD)</td>
<td>118</td>
<td>11.56</td>
</tr>
<tr>
<td>Southeast (AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)</td>
<td>217</td>
<td>21.25</td>
</tr>
<tr>
<td>Southwest (AZ, NM, OK, TX)</td>
<td>48</td>
<td>4.70</td>
</tr>
<tr>
<td>Rocky Mountains (CO, ID, MT, UT, WY)</td>
<td>13</td>
<td>1.27</td>
</tr>
<tr>
<td>Far West (AK, CA, HI, NV, OR, WA)</td>
<td>98</td>
<td>9.60</td>
</tr>
<tr>
<td>Outlying Areas (AS, FM, GU, MH, MP, PR, PW, VI)</td>
<td>23</td>
<td>2.25</td>
</tr>
<tr>
<td>Total</td>
<td>1021</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Table 7

*Descriptive Statistics for APPS and YIELD Datasets*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPS</td>
<td>0</td>
<td>52,972</td>
<td>3,754</td>
<td>6,049</td>
</tr>
<tr>
<td>YIELD</td>
<td>0</td>
<td>1.00 (100%)</td>
<td>0.3741 (37.41%)</td>
<td>0.2272 (22.72%)</td>
</tr>
</tbody>
</table>

| **Independent Variables** |         |          |            |           |
| INCIDENTS_TOT | 0       | 3063     | 126        | 210       |
| COST_TOT      | 0       | $47,246.00 | $26,249.74 | $10,279.78 |
| FINAID_TOT    | $378.24 | $41,566.46 | $10,379.86 | $5,542.96 |
| EXPEND_STU    | $1,785.00 | $176,054.95 | $21,286.52 | $14,627.60 |
| TUITION_RELIANCE | -.66 (-66%) | 1.00 (100%) | .5559 (55.59%) | .2049 (20.49%) |
| SIZE           | 20      | 44,516   | 3,333      | 4,636     |
| PERCENT_AI    | 0       | .25 (25%) | .0053 (.53%) | .0114 (1.14%) |
| PERCENT_ASIAN | 0       | .81 (81%) | .0379 (3.79%) | .0533 (5.33%) |
| PERCENT_BLACK | 0       | 1.00 (100%) | .1102 (11.02%) | .1629 (16.29%) |
| PERCENT_LATINO | 0       | 1.00 (100%) | .0856 (8.56%) | .1510 (15.10%) |
| PERCENT_WHITE | 0       | 1.00 (100%) | .6247 (62.47%) | .2280 (22.80%) |
| PERCENT_MULTI | 0       | .34 (34%) | .0196 (1.96%) | .0214 (2.14%) |

Checking Analysis Assumptions

One goal of regression analyses is to account for all of the meaningful variation found in the dependent variable, in this case number of applications and yield rate. Examining the residuals for system variations will indicate if the model has been misspecified. There are numerous assumptions that underlie multiple linear regression: linear relationship between IVs and DVs, correct specification of the IVs in the model, homoscedasticity, independence of residuals, and normality of residuals (Cohen, Cohen, Aiken, & West, 2003). Additionally, we will examine multicollinearity in the model, though it may not be a significant obstacle as the purpose of this study involves prediction (Williams, Grajales, & Kurkiewicz, 2013).

While we have one sample (n=1021), this study utilizes two separate datasets in analyses as we have two different dependent variables (number of applications and yield rate). Each dataset will be discussed in the following subsections.
Form of the Relationship

Examining the graphical displays is an effective way to check the first assumption regarding the form of the relationship (Cohen, Cohen, Aiken & West, 2003). In order to do so, the residuals will be plotted against 12 of the independent variables (total number of incidents, sticker price of institution, average financial aid award, expenditure per student, tuition reliance, institutional enrollment, and percentages of American Indian, Asian, Black, Latino, White, and Multi-Ethnic students). The variables of the dummy-coded Carnegie Classifications are not included as they are nominal data. Additionally, the residuals will be plotted against the predicted dependent variables. Each scatterplot includes its lowess curve in order to determine linearity. Scatterplots for the applications dataset can be found in Appendix A. The scatterplots for the yield rate dataset can be found in Appendix B.

When examining the scatterplots, the lowess lines can be used to determine any violation of the assumption for the form of the relationship. Two scatterplots clearly showed a violation of this assumption in the applications dataset (total number of incidents and predicted values), by indicating a nonlinear relationship between the independent and dependent variables.

Similarly, when examining the scatterplots from the yield rate dataset, this assumption appears to be violated. The same two specific scatterplots were of concern (total number of incidents and predicted values), as indications of a nonlinear relationship between the independent and dependent variables.

To overcome this violation, the study used tests that are robust to violations of the assumptions and any outliers. Specifically, the study utilized the bootstrap with the bias
corrected accelerated as its confidence interval set at 95%. We can assume that this method is appropriate as the sample in this study is the population, save the cases that were deleted due to missing data.

_Homoscedasticity of Residuals_

To check the assumption of homoscedasticity, the same sets of scatterplots were used. When examining the specific scatterplot of the standardized predicted values and the standardized residuals, it was not clear that the assumption of homoscedasticity was met. As the independent variable increased or decreased, there was not consistency among its residuals. As with the linear relationship assumption, bootstrapping the regression model will avoid the assumption of homoscedasticity.

_Normality of Residuals_

As this study is using a large sample size (n=1021), Field (2013) recommends using a visual examination of the distribution as well as an interpretation of the values for skewness and kurtosis. Upon visual examination of the residuals for the applications dataset, it is clear that the data is not normally distributed and a larger proportion of the scores hover around zero than a normal curve would allow. The corresponding standardized score for skewness is 21.766 indicating a very significant positive skew. Additionally, the kurtosis z-score is 142.71 indicating significant problems. However, the sample is quite large and is, save the missing data, the population that we are examining.

The yield rate dataset had a distribution of residuals that were closer to normal, but were still highly clustered around the mean. The skewness z-score was found to be -.12 which indicates that there is no significant amount of skewness. The kurtosis z-score was found to be
23.03, which similar to the applications dataset, indicates a very significant amount of kurtosis though because of the sample size, is not surprising.

**OLS Analyses**

Moving forward with the analyses, the study will still use ordinary least squares, but to make it a more robust test, bootstrapping will be part of the test. This is due to the violations of several assumptions: normality of residuals, homoscedasticity of residuals, and linear form of the model. The syntax for the following analyses for the applications dataset can be found in Appendix C. The syntax for the yield rate dataset analyses can be found in Appendix D.

*Analysis of the Applications Dataset*

A correlation matrix is presented in Table 8. The values indicate the strength and direction of the relationship between the dependent and independent variables used in the analysis. There is a strong, positive, and statistically significant correlation between the dependent variable, number of applications, and the predictor variable, total number of incidents ($r = .63, p < .001$). The dependent variable, number of applications, is also strongly and positively correlated to the independent variables expenditure per student ($r = .43, p < .001$), sticker price ($r = .47, p < .001$), research institution ($r = .65, p < .001$), and institutional enrollment ($r = .80, p < .001$). This follows logical sense that larger institutions will have more applications. The predictor variable of baccalaureate institution is included in this correlation matrix, though this was the dummy-coded variable removed from the model during the regression analysis.
### Table 8

**Correlation Matrix for APPS Dataset**

<table>
<thead>
<tr>
<th></th>
<th>INCIDENTS_TOT</th>
<th>EXPEND_STU</th>
<th>TUITION_REL</th>
<th>COST_TOT</th>
<th>DC_RESEARCH</th>
<th>DC_MASTERS</th>
<th>DC_BACH</th>
<th>DC_SPECIAL</th>
<th>SIZE</th>
<th>PERC_AI</th>
<th>PERC_ASIAN</th>
<th>PERC_BLACK</th>
<th>PERC_LATINO</th>
<th>PERC_WHITE</th>
<th>PERC_MULTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.63***</td>
<td>.43***</td>
<td>-.19***</td>
<td>.47***</td>
<td>.22***</td>
<td>.65***</td>
<td>-.03</td>
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<td>.80***</td>
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<td>.31***</td>
<td>-.04</td>
<td>.01</td>
<td>.15***</td>
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<tr>
<td>EXPEND_STU</td>
<td>.23***</td>
<td>-.09**</td>
<td>.48***</td>
<td>.21***</td>
<td>.37***</td>
<td>.05</td>
<td>-.08**</td>
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<td>.14***</td>
<td>-.12***</td>
<td>-.06*</td>
<td>.01</td>
<td>.06*</td>
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<td>TUITION_REL</td>
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<td>.52***</td>
<td>.59***</td>
<td>.32***</td>
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<td>.04</td>
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<td>.20***</td>
<td>-.08**</td>
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<td>-.14***</td>
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<td>.12***</td>
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<td>-.24***</td>
<td>-.05*</td>
<td>.11***</td>
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</tr>
<tr>
<td>PERC_BLACK</td>
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<td>-.06*</td>
<td>-.00</td>
<td>.07*</td>
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<tr>
<td>PERC_LATINO</td>
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<td>.02</td>
<td>-.31***</td>
<td>.33***</td>
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</tr>
<tr>
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<td>-.56***</td>
<td>-.11***</td>
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<tr>
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<td>-.04</td>
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<td></td>
</tr>
</tbody>
</table>

*Note. *p ≤ .05. **p ≤ .01. ***p ≤ .001.*
The data also indicate strong, positive, and statistically significant correlations between the independent variables of total institutional enrollment and research institution ($r = .63, p < .001$), sticker price, and average financial aid award ($r = .62, p < .001$), expenditure per student and average financial aid award ($r = .59, p < .001$), and expenditure per student and sticker price ($r = .52, p < .001$). These correlations are expected due to the face-level interplay of these variables at private institutions. It is common practice that as institutional price increases, the amount of financial aid also increases.

A strong, negative, and statistically significant correlation was found between reliance on tuition revenue and average financial aid award ($r = -.60, p < .001$). This means that as the amount of financial aid goes up per student, the institutional reliance on tuition decreases.

To check for multicollinearity, both the variance inflation factor (VIF) and tolerance were examined for the applications dataset. Those statistics can be found in Table 9.

Table 9

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.567</td>
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<td>TUITION_REL</td>
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<tr>
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<td>FINAID_TOT</td>
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</tr>
<tr>
<td>DC_SPECIAL</td>
<td>.575</td>
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</tr>
<tr>
<td>SIZE</td>
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<td>1.063</td>
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</tr>
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<td>5.645</td>
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<tr>
<td>PERC_MULTI</td>
<td>.809</td>
<td>1.235</td>
</tr>
</tbody>
</table>

To follow the recommendation from Bowerman & O’Connell (1990), there is not a cause
for concern considering the largest VIF is not greater than 10. Similarly, tolerance does not indicate a serious problem as no value is less than .1. However, the tolerance score of .18 for the percentage of white students indicates a potential problem (Menard, 1995).

The regression equation of all 15 independent variables on the dependent variable of number of applications generated a statistically significant model, $F(15, 1005) = 233.36, p < .001$. The model correlation coefficient and effect size are presented in Table 10. These statistics indicate a strong and positive relationship between the number of applications and the independent variables. The $R^2$ effect size of .777 indicates that 77.7% of the variance in the number of application that an institution receives can be accounted by the 15 independent variables.

**Table 10**

*Regression Results for APPS Dataset*

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient (b)</th>
<th>SE B</th>
<th>β</th>
<th>BCa 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4201.75**</td>
<td>1213.29</td>
<td></td>
<td>[-6993.55, -1455.97]</td>
</tr>
<tr>
<td>INCIDENTS_TOT</td>
<td>5.40**</td>
<td>1.35</td>
<td>.19</td>
<td>[2.91, 8.59]</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.050**</td>
<td>.02</td>
<td>.12</td>
<td>[.02, .08]</td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>-2289.13***</td>
<td>594.51</td>
<td>-.08</td>
<td>[-3535.71, -1244.16]</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.070**</td>
<td>.02</td>
<td>.12</td>
<td>[.03, .10]</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>.03</td>
<td>.03</td>
<td>.02</td>
<td>[-.03, .09]</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>3244.38***</td>
<td>806.66</td>
<td>.16</td>
<td>[1761.01, 4522.63]</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>-173.09</td>
<td>254.36</td>
<td>-.01</td>
<td>[-695.22, 294.00]</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>245.64</td>
<td>226.47</td>
<td>.02</td>
<td>[-149.04, 639.96]</td>
</tr>
<tr>
<td>SIZE</td>
<td>.72**</td>
<td>.09</td>
<td>.55</td>
<td>[.56, .91]</td>
</tr>
<tr>
<td>PERC_AI</td>
<td>4535.17</td>
<td>6086.94</td>
<td>.01</td>
<td>[-9343.86, 13144.06]</td>
</tr>
<tr>
<td>PERCASI_AN</td>
<td>5825.34</td>
<td>3263.11</td>
<td>.05</td>
<td>[74.48, 15638.43]</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>5124.65**</td>
<td>1276.19</td>
<td>.14</td>
<td>[2815.00, 7478.35]</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>3633.11**</td>
<td>1184.35</td>
<td>.09</td>
<td>[1542.49, 5711.54]</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>2561.06*</td>
<td>1087.04</td>
<td>.10</td>
<td>[597.97, 4770.04]</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>848.17</td>
<td>4152.42</td>
<td>.00</td>
<td>[-9124.47, 8327.38]</td>
</tr>
</tbody>
</table>

*Note.* $n = 1021$. $R^2 = .777$ ($p < .001$).

The analysis resulted in unstandardized regression coefficients, $b$, and standardized regression coefficients, $\beta$. These values can be examined to determine how well each predictor
variable contributes to the model and the composition of the predicted dependent variable. Structure coefficients were calculated by determining the correlations between each predictor variable and the predicted dependent variable. The squared structure coefficient represents the effect size associated with each predictor. Table 11 presents the structured coefficient, and squared structure coefficient for each predictor in the applications dataset. The findings presented in Table 11 indicate that the structure coefficients confirm that the beta weights are accurately representing the explained variance found in our dependent variable, number of applications. Specifically, the findings indicate that the predictor variable of total institutional enrollment is the greatest contributor to the regression equation ($b = .72\ p < .001; \beta = .55$). The findings also show that the total number of incidents ($b = 5.40, p < .001; \beta = .19$) and research institution categorization ($b = 3244.38, p < .001; \beta = .16$) are two predictors that also contribute to the regression equation with a moderate effect size.

Table 11

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Structure Coefficient</th>
<th>Squared Structure Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.71***</td>
<td>.50</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.49***</td>
<td>.24</td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>-.22***</td>
<td>.05</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.54***</td>
<td>.29</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>.25***</td>
<td>.06</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>.74***</td>
<td>.55</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>-.03</td>
<td>.00</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>-.28***</td>
<td>.08</td>
</tr>
<tr>
<td>SIZE</td>
<td>.90***</td>
<td>.82</td>
</tr>
<tr>
<td>PERC_AI</td>
<td>-.090***</td>
<td>.01</td>
</tr>
<tr>
<td>PERC_Asian</td>
<td>.35***</td>
<td>.12</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>-.05</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>-.18***</td>
<td>.03</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>.12***</td>
<td>.02</td>
</tr>
</tbody>
</table>

*p ≤ .05. ** p ≤ .01. *** p ≤ .001.
The findings also indicate that the predictor variables of expenditure per student \((b = .05, p < .001; \beta = .12)\) and sticker price \((b = .07, p < .001; \beta = .12)\) are statistically significant predictors that can explain 24% and 29% of the variance in the number of applications, respectively.

Although beta weights, standardized beta weights, and structure coefficients can provide insight into the model, commonality analysis deepens the interpretation of regression effects (Nimon, 2010). Nimon (2010) provides an SPSS script that can be used to calculate the commonality effects. That script can be found in Appendix E.

The number of partitions that can be explored is determined by \(2^k – 1\) where \(k\) is the number of predictor variables. For this model, that would mean a total of 32,767 subsets to explore, which is not realistic to present. A selection of the unique and common variance accounted for, however has been presented in Table 12.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unique</th>
<th>% Total of (R^2)</th>
<th>Common</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.02</td>
<td>2.56</td>
<td>.37</td>
<td>.39</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.01</td>
<td>.73</td>
<td>.18</td>
<td>.19</td>
</tr>
<tr>
<td>TUITION_REL</td>
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<td>.35</td>
<td>.03</td>
<td>.04</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.00</td>
<td>.51</td>
<td>.22</td>
<td>.22</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>.00</td>
<td>.02</td>
<td>.05</td>
<td>.05</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>.01</td>
<td>1.50</td>
<td>.42</td>
<td>.43</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>.00</td>
<td>.01</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>.00</td>
<td>.02</td>
<td>.06</td>
<td>.06</td>
</tr>
<tr>
<td>SIZE</td>
<td>.12</td>
<td>15.79</td>
<td>.51</td>
<td>.63</td>
</tr>
<tr>
<td>PERC_AI</td>
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<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>PERC_Asian</td>
<td>.00</td>
<td>.18</td>
<td>.09</td>
<td>.09</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>.01</td>
<td>.62</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.00</td>
<td>.31</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>.00</td>
<td>.21</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>.00</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>
These findings confirm that size is the most effective predictor in the model. The predictor variable, the total number of incidents, which is central to this study, is shown to uniquely explain 2.56% of the variance of the total number of applications, which is the second-best predictor. However, both IVs of total number of incidents and research institution appear to be moderating variables considering the amount of common effects found in the analysis.

Presented in Table 13 is a summary of the regression results for the applications dataset. Displaying the findings of these various analyses alongside one another allows for a more comprehensive evaluation of each predictor as part of the entire model.

Table 13

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$β$</th>
<th>$p$</th>
<th>Unique</th>
<th>Common</th>
<th>Total</th>
<th>% of $R^2$ ($r^2$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.19</td>
<td>.002</td>
<td>.02</td>
<td>.37</td>
<td>.39</td>
<td>.39</td>
<td>50.32</td>
<td></td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.12</td>
<td>.005</td>
<td>.01</td>
<td>.18</td>
<td>.19</td>
<td>.19</td>
<td>23.81</td>
<td></td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>-.08</td>
<td>.002</td>
<td>.00</td>
<td>.03</td>
<td>.04</td>
<td>.04</td>
<td>4.63</td>
<td></td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.12</td>
<td>.002</td>
<td>.00</td>
<td>.22</td>
<td>.22</td>
<td>.22</td>
<td>28.70</td>
<td></td>
</tr>
<tr>
<td>FINAID_TOT</td>
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<td>.392</td>
<td>.00</td>
<td>.05</td>
<td>.05</td>
<td>.05</td>
<td>6.18</td>
<td></td>
</tr>
<tr>
<td>DC_RESEARCH</td>
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<td>.002</td>
<td>.01</td>
<td>.42</td>
<td>.43</td>
<td>.43</td>
<td>54.96</td>
<td></td>
</tr>
<tr>
<td>DC_MASTERS</td>
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<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>DC_SPECIAL</td>
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<td>.295</td>
<td>.00</td>
<td>.06</td>
<td>.06</td>
<td>.06</td>
<td>7.98</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>.55</td>
<td>.002</td>
<td>.12</td>
<td>.51</td>
<td>.63</td>
<td>.63</td>
<td>81.47</td>
<td></td>
</tr>
<tr>
<td>PERC_AI</td>
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<td>.290</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>PERC_ASIAN</td>
<td>.05</td>
<td>.066</td>
<td>.00</td>
<td>.09</td>
<td>.09</td>
<td>.09</td>
<td>11.97</td>
<td></td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>.14</td>
<td>.002</td>
<td>.01</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.26</td>
<td></td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.09</td>
<td>.005</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>.10</td>
<td>.023</td>
<td>.00</td>
<td>.02</td>
<td>.02</td>
<td>.02</td>
<td>3.09</td>
<td></td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>.00</td>
<td>.827</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>1.54</td>
<td></td>
</tr>
</tbody>
</table>

Summary of OLS Analysis for Applications Dataset

This model included a total of 15 predictors, with one predictor withheld from the analysis as part of dummy coding for institutional Carnegie classification. Those predictors included the total number of incidents, the average expenditure per student, the percentage of
tuition reliance, the total cost of attendance, the average financial aid total awarded to each student, Carnegie classification, total enrollment, and percentages of ethnic groups. Those 15 predictors statistically significantly accounted for 77.7% \( F(15, 1005) = 233.36, p < .001 \) of the variance in the observed dependent variable, number of applications. Of the predictor variables, total institutional enrollment was found to be given the most credit with \( \beta = .55, p < .01 \) and uniquely accounts for 15.79% of the variance in the number of applications. As the central predictor to the study, the total number of incidents was found to be given the second-most credit in the model with \( b = 5.40, \beta = .19, p < .01 \), however, the central predictor variable did not uniquely explain much of the variance of applications, only 2.56%. In other words, the relationship between the total number of incidents and number of applications is positive. Within this model, the total number of incidents at an institution can predict applications. For every one unit of increase in incident total, the number of applications increases by 5.40.

**Analysis of the Yield Rate Dataset**

A correlation matrix is presented in Table 14 below. The values indicate the strength and direction of the relationship between the dependent and independent variables used in the analysis. Because the predictor variables are consistent between the applications dataset and the yield rate dataset, the only changes in correlation statistics are in regard to the dependent variable yield rate. There is a moderate, negative, and statistically significant correlation between the yield and the total number of incidents \( r = -.29, p < .001 \). In other words, as the number of Clery incidents increases, the institutional yield rate decreases.
Table 14

Correlation Matrix for YIELD Dataset

|       | INCIDENTS_TOT | EXPEND_STU | TUITION_REL | COST_TOT | FINAID_TOT | DC_RESEARCH | DC_MASTERS | DC_BACH | DC_SPECIAL | SIZE | PERC_AI | PERC_ASIAN | PERC_BLACK | PERC_LATINO | PERC_WHITE | PERC_MULTI |
|-------|---------------|------------|-------------|----------|------------|--------------|------------|---------|------------|------|---------|------------|------------|-------------|------------|------------|-----------|
| YIELD | -.29***       | -.04       | -.57***     | -.08**   | -.19***    | -.20***      | .55***     | -.12*** | .01        | -.03 | -.13*** | .21***     | -.03       | -.11***     |            |
| INCIDENTS_TOT | .23***       | -.09**     | .48***      | .21***   | .37***     | .05          | -.08**     | -.24*** | .55***     | -.07**| .14***   | -.12***    | -.06*      | .01         | .06*       |            |
| EXPEND_STU | -.55***      | .52***     | .59***      | .32***   | -.25***    | .04          | .00        | .20***  | -.08**     | .40***| -.14***  | -.13***    | -.04       | .25***      |            |
| TUITION_REL | -.22***      | -.60***    | -.12***     | .34***   | -.26***    | .02          | .05        | -.02    | -.07*      | .00   | .28***   | -.15***    | -.10***    | .30***      |            |
| COST_TOT | .62***        | .31***     | .02         | .10***   | -.38***    | .29***       | -.08**     | .32***  | -.23***    | -.21***| .06*     | .30***     |            |            |            |
| FINAID_TOT | -.08**       | -.26***    | .36***      | -.22***  | -.05       | -.07*        | .14***     | -.17*** | -.18***    | .15***| .22***   |            |            |            |            |
| DC_RESEARCH | -.21***      | -.28***    | -.15***     | .63***   | -.02       | .28***       | -.04       | .01     | -.16***    | .06*  |            |            |            |            |            |
| DC_MASTERS | -.56***      | -.31***    | -.13***     | .02      | -.04       | .01          | .05*       | -.03    | -.05       |      |            |            |            |            |            |
| DC_BACH | -.41***       | -.29***    | .03         | -.20***  | .13***     | -.01         | .03        | .01     | .01         |      |            |            |            |            |            |
| DC_SPECIAL | -.26***      | .00        | .09***      | -.14***  | -.06*      | .12***       | -.01       |         |            |      |            |            |            |            |            |
| SIZE | -.08**       | .24***     | -.05        | .11***   | -.20***    | .03          |           |         |            |      |            |            |            |            |            |
| PERC_AI |            |            |            |         |           |             |           |         |            |      |            |            |            |            |            |
| PERC_ASIAN |            |            |            |         |           |             |           |         |            |      |            |            |            |            |            |
| PERC_BLACK |            |            |            |         |           |             |           |         |            |      |            |            |            |            |            |
| PERC_LATINO |            |            |            |         |           |             |           |         |            |      |            |            |            |            |            |
| PERC_WHITE |            |            |            |         |           |             |           |         |            |      |            |            |            |            |            |

Note. *p ≤ .05. ** p ≤ .01. *** p ≤ .001.
Yield rate is strongly and negatively correlated to the independent variable of sticker price ($r = -.57, p < .001$). This relationship indicates that as the total cost of enrollment increases, the yield rate for the institution decreases. On its face, this makes sense as consumers make decisions based on costs, including price.

The dependent variable, yield rate, has a strong, positive, and statistically significant correlation with the variable specialized institution ($r = .55, p < .001$). This means that institutions of higher education that are categorized as specialized have a higher rate of yield for its applicants into matriculation. There is a logical alignment with this idea that individuals seek out specific, specialized institutions when they know they want enroll.

The predictor variable of baccalaureate institution is included in this correlation matrix, though this was the dummy-coded variable removed from the model during the regression analysis. Because the predictor variables remained constant between the applications dataset and the yield rate dataset, the same correlations were found among them. Additionally, the collinearity statistics remained constant and, overall, did not present a significant cause for concern.

The regression equation of all 15 independent variables on the yield rate as the dependent variable generated a statistically significant model, $F(15, 1005) = 91.90, p < .001$. The model correlation coefficient and effect size are presented in Table 15. These statistics indicate an overall model of a strong and positive relationship between yield rate and the predictor variables. The $R^2$ effect size of .578 indicates that 57.8% of the variance in institutional yield rates can be accounted by the 15 independent variables included in the model.
Table 15

Regression Table for YIELD Dataset

<table>
<thead>
<tr>
<th>Predictor</th>
<th>b</th>
<th>SE b</th>
<th>β</th>
<th>BCa 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>.69**</td>
<td>.06</td>
<td></td>
<td>[.57, .79]</td>
</tr>
<tr>
<td>INCIDENTS_TOT</td>
<td>-4.7E-5*</td>
<td>2.41E-5</td>
<td>-.04</td>
<td>[-9.53E-5, -7.24E-6]</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>4.13E-6**</td>
<td>7.53E-7</td>
<td>.27</td>
<td>[2.75E-6, 6.34E-6]</td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>-.12*</td>
<td>.05</td>
<td>-.11</td>
<td>[-.22, .00]</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>-1.27E-5**</td>
<td>1.32E-6</td>
<td>-.58</td>
<td>[-1.54E-5, -1.00E-5]</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>-3.84E-6</td>
<td>2.20E-6</td>
<td>-.09</td>
<td>[-8.33E-6, 5.35E-7]</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>.01</td>
<td>.02</td>
<td>.02</td>
<td>[.03, .06]</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>-.01</td>
<td>.01</td>
<td>-.02</td>
<td>[-.04, .01]</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>.17**</td>
<td>.02</td>
<td>.30</td>
<td>[.13, .21]</td>
</tr>
<tr>
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<td>3.17E-6*</td>
<td>1.55E-6</td>
<td>.07</td>
<td>[1.97E-7, 6.24E-6]</td>
</tr>
<tr>
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<td>.48</td>
<td>-.01</td>
<td>[-1.43, .72]</td>
</tr>
<tr>
<td>PERC_Asian</td>
<td>-.01</td>
<td>.18</td>
<td>.00</td>
<td>[-.39, .26]</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>-.24**</td>
<td>.06</td>
<td>-.17</td>
<td>[-.37, -.10]</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.21**</td>
<td>.06</td>
<td>.14</td>
<td>[.07, .32]</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>.03</td>
<td>.05</td>
<td>.03</td>
<td>[.09, .14]</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>-.09</td>
<td>.29</td>
<td>-.01</td>
<td>[-.74, .46]</td>
</tr>
</tbody>
</table>

Note. n = 1021. R² = .578 (p < .001).
*p ≤ .05. ** p ≤ .01.

The analysis resulted in unstandardized regression coefficients, b, and standardized regression coefficients, β. These values can be examined to determine how well each predictor variable contributes to the model and the composition of the predicted dependent variable.

Structure coefficients were calculated by determining the correlations between each predictor variable and the predicted dependent variable. The squared structure coefficient represents the effect size associated with each predictor. Table 16 presents the structured coefficient and squared structure coefficient for each predictor in the yield rate dataset. The findings regarding structure coefficients presented in Table 16 confirm that sticker price is the strongest predictor based on the beta weight. However, the predictor variable specialized institution presents differently. While the standardized beta weight for specialized institution is much smaller than sticker price, the magnitude of the structure coefficient and resulting effect size is much closer to those for sticker price. Specifically, the findings indicate that the predictor variable of sticker
price is the greatest contributor to the regression equation \( (b = -1.27\times10^{-5}, p < .01; \beta = -0.58) \). The findings also show that the predictor central to this study, the total number of incidents \( (b = -4.74\times10^{-5}, p < .05; \beta = -0.04) \) contributes to the regression equation, but with a small effect size.

Table 16

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Structure Coefficient</th>
<th>Squared Structure Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>-0.38***</td>
<td>0.14</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>-0.02</td>
<td>2.56E-4</td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>-0.05</td>
<td>0.00</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>-0.75***</td>
<td>0.57</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>-0.38***</td>
<td>0.15</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>-0.11***</td>
<td>0.01</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>-0.26***</td>
<td>0.07</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>0.72***</td>
<td>0.52</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.16***</td>
<td>0.03</td>
</tr>
<tr>
<td>PERC_AI</td>
<td>0.02</td>
<td>2.89E-4</td>
</tr>
<tr>
<td>PERC_ASIAN</td>
<td>-0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>-0.17***</td>
<td>0.03</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>0.27***</td>
<td>0.07</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>-0.15***</td>
<td>0.02</td>
</tr>
</tbody>
</table>

\*p \leq 0.05. \** p \leq 0.01. \*** p \leq 0.001.

The predictor expenditure per student \( (b = 4.13\times10^{-6}, p < .01; \beta = 0.27) \) has a significant standardized beta weight, but the structure coefficient and effect size are negligible.

As was conducted with the applications dataset, a commonality analysis was conducted for the yield rate dataset in order to further investigate the model following the Nimon (2010) publication. Again, the number of partitions that can be explored is determined by \( 2^k - 1 \) where \( k \) is the number of predictor variables which in this model would be a total of 32,767. A selection of the unique and common variance accounted for, however has been presented in Table 17.
Table 17

*Unique and Total of All Common Effects for Each Predictor in the YIELD Dataset*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unique</th>
<th>Unique % of $R^2$</th>
<th>Common</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.001</td>
<td>.19</td>
<td>.08</td>
<td>.08</td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.03</td>
<td>4.94</td>
<td>-.03</td>
<td>.00</td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>.01</td>
<td>.95</td>
<td>-.01</td>
<td>.00</td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.10</td>
<td>16.55</td>
<td>.23</td>
<td>.33</td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>.003</td>
<td>.47</td>
<td>.08</td>
<td>.08</td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>.00</td>
<td>.02</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>.00</td>
<td>.06</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>.05</td>
<td>8.62</td>
<td>.25</td>
<td>.30</td>
</tr>
<tr>
<td>SIZE</td>
<td>.00</td>
<td>.29</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>PERC_AI</td>
<td>.00</td>
<td>.02</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_ASIAN</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>.01</td>
<td>1.27</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.01</td>
<td>.94</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>.00</td>
<td>.02</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>

These findings confirm that the total cost of attendance is the most effective predictor in the model. Furthermore, it confirms that the specialized institution variable is an effective predictor in the model. The total number of incidents does not uniquely contribute to the model, but has more of a contribution when moderating other variables.

Expenditure per student was determined to have a unique effect that explains close to 5% of the variance in yield rate. However, that same variable appears to be a suppressor variable in the model as it affects other variables in the opposite direction of its unique effect (Pedhazur, 1997).

Table 18 presents a summary of the regression results for the yield rate dataset. Displaying the findings of these various analyses alongside one another allows for a more comprehensive evaluation of each predictor as part of the entire model.
Table 18

### Combined Regression and Commonality Results for YIELD Dataset

<table>
<thead>
<tr>
<th>Predictor</th>
<th>R</th>
<th>R²</th>
<th>β</th>
<th>p</th>
<th>Unique</th>
<th>Common</th>
<th>Total</th>
<th>% of R² (r²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCIDENTS_TOT</td>
<td>.760</td>
<td>.578</td>
<td></td>
<td></td>
<td>.08</td>
<td>.08</td>
<td>14.36</td>
<td></td>
</tr>
<tr>
<td>EXPEND_STU</td>
<td>.878</td>
<td>.766</td>
<td>-.07</td>
<td>.01</td>
<td>.12</td>
<td>.12</td>
<td>17.80</td>
<td></td>
</tr>
<tr>
<td>TUITION_REL</td>
<td>.27</td>
<td>.002</td>
<td>.02</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
<td>4.40</td>
<td></td>
</tr>
<tr>
<td>COST_TOT</td>
<td>.58</td>
<td>.002</td>
<td>.10</td>
<td>.23</td>
<td>.11</td>
<td>.11</td>
<td>20.15</td>
<td></td>
</tr>
<tr>
<td>FINAID_TOT</td>
<td>.09</td>
<td>.085</td>
<td>.003</td>
<td>.08</td>
<td>.00</td>
<td>.00</td>
<td>1.45</td>
<td></td>
</tr>
<tr>
<td>DC_RESEARCH</td>
<td>.02</td>
<td>.567</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>1.03</td>
<td></td>
</tr>
<tr>
<td>DC_MASTERS</td>
<td>.02</td>
<td>.336</td>
<td>.00</td>
<td>.04</td>
<td>.04</td>
<td>.04</td>
<td>6.40</td>
<td></td>
</tr>
<tr>
<td>DC_SPECIAL</td>
<td>.30</td>
<td>.002</td>
<td>.05</td>
<td>.25</td>
<td>.30</td>
<td>.30</td>
<td>52.08</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>.07</td>
<td>.033</td>
<td>.00</td>
<td>.01</td>
<td>.02</td>
<td>.02</td>
<td>2.60</td>
<td></td>
</tr>
<tr>
<td>PERC_AI</td>
<td>-.01</td>
<td>.565</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>PERC_Asian</td>
<td>.00</td>
<td>.945</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>PERC_BLACK</td>
<td>-.17</td>
<td>.002</td>
<td>.01</td>
<td>.01</td>
<td>.02</td>
<td>.02</td>
<td>2.77</td>
<td></td>
</tr>
<tr>
<td>PERC_LATINO</td>
<td>.14</td>
<td>.005</td>
<td>.01</td>
<td>.04</td>
<td>.04</td>
<td>.04</td>
<td>7.27</td>
<td></td>
</tr>
<tr>
<td>PERC_WHITE</td>
<td>.03</td>
<td>.648</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>1.73</td>
<td></td>
</tr>
<tr>
<td>PERC_MULTI</td>
<td>-.01</td>
<td>.762</td>
<td>.00</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
<td>2.25</td>
<td></td>
</tr>
</tbody>
</table>

Summary of OLS Analysis for Yield Rate Dataset

The model used for the yield rate dataset also included a total of 15 predictors, with one predictor withheld from the analysis as part of dummy coding the institutional Carnegie classification. Those predictors included the total number of incidents, the average expenditure per student, the percentage of tuition reliance, the total cost of attendance, the average financial aid total awarded to each student, Carnegie classification, total enrollment, and percentages of ethnic groups. Those 15 predictors statistically significantly accounted for 57.8% (F(15, 1005) = 91.90, p < .001) of the variance in the observed yield rate. Of the predictor variables, sticker price was found to be given the most credit with β = -.58, p < .01 and uniquely accounts for 16.55% of the variance found in institutional yield rate. As price increases, institutional yield rate decreases.
The predictor variable central to the research question, the total number of incidents, was found to be statistically significant in the model with $b = -4.74E-5$, $\beta = -.04$, $p < .05$. However, it did not uniquely explain much of the variance of the yield rate, only .19%. The total number of incidents had a common effect of .08 which accounts for 14.36% of the variance in yield rate. In other words, the relationship between the total number of incidents and yield rate is negative and, by itself, the total number of incidents does not have an impactful effect size, but it does appear to have a moderating role with the other independent variables.
CHAPTER 5

DISCUSSION

The problem this study addressed was the contending priorities of recruiting students and compliance with the federally mandated Clery Act. Issues of campus safety, including the impact of crime statistics and the Clery Act, have been prominent among researchers and practitioners as well as the public forum. The Clery Act was born out of tragedy with the intention of requiring transparency between institutions and their consumers regarding acts of crime that occur on campus. As the competition for students increases, specifically among private colleges and universities who are more likely to be enrollment dependent when compared to their public counterparts, so does the complexity of recruitment. Factors such as crime statistics and disciplinary referrals for specific behaviors are integrated into the college-choice process along with a multitude of other institutional characteristics. The ability to discern the relationship between Clery Act data and recruitment may help practitioners to advocate for the prioritization to minimize campus crime.

The primary aim of this study was to determine the ability institutional characteristics, specifically the total number of incidents reported in its Annual Security Report, to predict the number of applications received and the subsequent yield rate at private, four-year colleges and universities.

Research Questions Addressed

The research questions that guided this study are presented and then addressed based upon the findings from Chapter 4.
Research Question #1: Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the quantity of applications at private, four-year colleges and universities?

The first OLS analysis included the total number of applications (APPS) as the dependent variable. The analysis produced a model with 15 independent variables including the predictor variable associated with this research question, the total number of incidents reported. The analysis produced a statistically significant model, \( F(15, 1005) = 233.36, p < .001 \), which explained 77.7% of the variance found in the number of applications. Based upon this substantial effect size, the selection of independent variables were good predictors for my first dependent variable.

As a predictor variable, the total number of incidents was found to have a positive correlation with the number of applications (\( r = .63, p < .001 \)). The OLS analysis resulted in the total number of incidents as a statistically significant predictor from the independent variable set with \( b = 5.40, \beta = .19, p < .01 \). While the total number of incidents only accounted for 2.56% of the total effect size, it had a much larger common effect accounting for a total 50.32% of the model’s effect size. The independent variables of total institutional enrollment and research institution categorization were also found to be good contributors to the overall effect size with unique effects accounting for 15.79% and 1.50%, respectively, and common effects accounting for 81.47% and 54.96%, respectively.

The positive coefficient associated with the total number of incidents indicated a relationship antithetical to the study’s original hypothesis. Based on the central premise to the
Clery Act legislative act, I surmised that as the number of incidents increased in value, the values for applications would decrease, or that the coefficient would be negative.

However, other findings involving the independent variables of total institutional enrollment and research institution helped to explain the overall model. The relationship between the number of applications an institution receives is highly correlated to total enrollment \( (r = .80, p < .001) \). In other words, the larger the school the more applications it will receive. Furthermore, private schools that are classified as research institutions have a strong correlation to institutional size \( (r = .63, p < .001) \). If larger schools receive more applications, and research institutions are often large schools, research institutions should receive higher numbers of applications.

The total number of incidents is also correlated with size of institution \( (r = .55, p < .001) \). In other words, the number of Clery Act related crimes increases as the total enrollment increases. The total number of incidents may be a better predictor of institutional size, which in turn is a predictor of applications. This finding support previous research that found that the institutional size influences the rate of crime (Fisher, 1995).

I conclude, then, that the findings in chapter 4 indicate the total number of incidents is a sufficient predictor of how many applications an institution will receive, but in the opposite direction to the original hypothesis. The fundamental purpose of the Clery Act is to provide adequate information so that potential students and their families can make an informed decision on a college or university prior to making a commitment to it (Janosik & Gregory, 2009). The findings associated with this study as they relate to the number of applications
received by a college or university would indicate that applying to the institution may not be considered a high level of commitment.

*Research Question #2: Do campus crime data reported as part of an institution’s Annual Security Report, as required by the Clery Act, predict the yield rates at private, four-year colleges and universities?*

The second OLS analysis included the ratio of those who enrolled after admittance to the total number of those admitted (yield rate) as the dependent variable. The analysis also produced a model with 15 independent variables including the predictor variable associated with the second research question, the total number of incidents reported. The analysis produced a statistically significant model, $F(15, 1005) = 91.90, p < .001$, with an associated effect size of 57.8%. Based upon this effect size, the selection of independent variables was determined to be good predictors for yield rate.

Because the dependent variable is a ratio, the resulting coefficients were much smaller than those in the first analysis with the dependent variable of applications, but interpreting standardized beta weights removes such issues of scale.

In this second model, the total number of incidents variable is negatively correlated with the yield rate ($r = -.29, p < .001$). This indicates a relatively weak, but statistically significant inverse relationship between the two variables. The OLS analysis resulted in the total number of incidents as a statistically significant predictor in the model ($b = -4.74E-5, \beta = -.04, p < .05$). However, it was found to have a more substantial structure coefficient at -.38 ($p < .001$) which indicates it was more involved in the model than its standardized beta weight would initially imply.
The commonality analysis for the total number of incidents resulted in a miniscule unique effect of .001 which accounted for .19% of unique variance in the total model $R^2$. However, its common effect for was found to be .08 and account for a common effect of 14.36% of the model $R^2$. So, while the total number of incidents reported in an institution’s Annual Security Report as required by the Clery Act may not serve as an effective predictor on its own, it appears to have predictive qualities when combined with other variables.

Comparatively, the independent variable of sticker price was found to be statistically significant and received the most credit in the model for the variance in yield rate ($b = -1.275E-5$, $\beta = -.58$, $p < .01$). The structure coefficient for sticker price confirmed it to be the best predictor in the model at -.75 ($p < .001$). The unique effect for sticker price was found to be .10 which uniquely explained 16.55% of the variance in yield rate. Moreover, the common effect associated with sticker price was found to account for 56.58% of the variance in yield rate. In other words, as the total cost of attendance increased, the rate of matriculation decreased in a meaningful and statistically significant manner. This supports a multitude of previous research with similar findings (Corman & Davidson, 1984; DesJardins, Ahlburg, & McCall, 2006; Pampaloni, 2010; Dynarski, 2000; Ehrenberg & Sherman, 1984; Heller, 1997, 1999; Jackson & Weathersby, 1975; McPherson & Schapiro, 1991; Parker & Summers, 1993; St. John 1990; Tierney, 1980, 1982).

Contrastingly, colleges and universities categorized as specialized had the opposite effect in the model. For those institutions, the rate of yield was effectively predicted ($b = .17$, $\beta = .30$, $p < .01$). The structure coefficient of specialized institution confirmed the standardized beta weight at .72 ($p < .001$). As a predictor, specialized institution uniquely accounted for
8.62% of the variance in yield rate and was found to have a common effect that accounted for 52.08% of the variance. This may be due to the nature of specialized institutions such as seminaries, rabbinical schools, or specialized health professional schools. The decision to attend a specific institution because of such a narrow focus is likely to be the primary motivator to then matriculate.

The direction of the relationship between the total number of incidents and yield rate is aligned with the original hypothesis for this study. Again, I return to the premise of the Clery Act which is to provide information to consumers, in this case potential students, so they may make an informed decision when committing to an institution of higher education (Janosik & Gregory, 2009). Unlike the decision to apply, it is clear that the choice to enroll in classes is a commitment. The findings presented here indicate that the data relating to campus crime is used considered in the college choice process and that as crime increases, the rate of enrollment, or yield, decreases.

Implications and Recommendations

The most basic implication from the study’s findings is that the Clery Act is relevant and should be understood by practitioners. If potential students and their families are using data in annual security reports to help them make a commitment to a college or university, administrators have the duty to report accurately. This finding, though, may lead to administrator motivation to hide high rates of crime in order to recruit students effectively. This could present an ethical dilemma because failure to recruit may cost an institution more than the consequences of being sanctioned for inaccurate reporting. Based on this possibility, I recommend that administrators and higher education professionals focus on measures to
reduce crime. This is the third stated purpose of the Clery Act (Janosik & Gregory, 2009), and arguably the most important. Safety and security can be a recruitment tool or a liability depending on how well institutions perform.

This leads to an important consideration for practitioners. When allocating resources, the true safety and security on campus is critical for the current members within the community. This study provides evidence that reducing crime positively impacts recruitment efforts, as well. Institutions are engaged in competition to recruit students and the process of decreasing melt and increasing yield aligns dedicated resources and the necessary recouping in the form of matriculated students. The campus environment described by crime statistics cannot be overlooked without possible negative consequences to one’s standing in the competitive marketplace.

Resource allocation is but one consideration. Based on these findings, it is recommended that those individuals responsible for compliance with the Clery Act not work under the supervision of those responsible for recruitment. Due to a perceived conflict of interest, the institutional hierarchy would be well served by such separation in order to avoid competing priorities. Moreover, higher levels of administration should understand the interplay between campus crime and recruitment to avoid undue influence or pressure. Similar to an ombudsman or Title IX coordinator, a compliance officer should function with relative insularity and free from such political pressure. Doing so could minimize the ethical dilemma.

As it relates to the college choice process, many potential students and their families may not have access or know about crime statistics at the time of application. That can be seen with the difference between the two dependent variables (number of applications and yield
rate). During the matriculation process, which leads to the yield ratio, more information becomes available and crime statistics play a larger role at that point in time.

Based on this study, institutions have a duty to provide accurate information regarding crime statistics. That accuracy is important in order to avoid selling a false good to potential consumers. However, the Clery Act primarily focuses on how institutions experience crimes or other incidents. Clery Act data are guided by boundaries of geography. Acts of violence, crime, and victimization are not, however, experienced by institutions. Rather, they are experienced by individuals. The current structure and requirements of the Clery Act, which this study shows is being used by potential students, does not truly capture the student experience, nor does it truly depict campus culture surrounding crime and other incidents. One recommendation would be that administrators revisit the Clery Act requirements and work to evolve the mandate into a more holistic encapsulation of the culture of campus safety and security.

Initially, such changes should include an expansion on what is reported. Specifically, students experience crimes and acts of misconduct outside the boundaries of institutionally owned and operated property; and statistics should reflect what students actually experience, not just the location of that experience.

The national and public conversations that occur about higher education cover a breadth of matters. Campus safety is but one amidst a sea of critical topics. This study provided support that the campus environment, as it relates to crime and misconduct, is relevant. Institutions of higher education have been scrutinized – Title IX investigations and perceived cover-ups, accountability, efficacy, and cost to name a few – and the subject of this
study is apparently no different as it relates to the college choice process for potential students and their families.

**Future Research**

The findings of this study indicate that the total number of crime incidents on a college campus contributes to a regression model that effectively predicts both applications and yield. However, as it relates to the central hypothesis, the total number of incidents negatively impacts an institution’s yield rate for potential students. Specifically, this study focused on private schools. A comparison study with public institutions may be helpful in further understanding the relationship between crime statistics and yield rates.

The findings in this study also highlight the need for additional research into specific types of crime as opposed to the aggregated variable used here. The ability to more clearly delineate crime statistics and their individual influence would add insight into the role the Clery Act has on recruitment and enrollment. Specifically, violent crimes would be of particular interest.

This study examined a snapshot of data at a single point in time. A better understanding of crime data and its ability to predict yield rates could come about from a longitudinal study that considers changes in yield rates over time. This study could prove valuable to develop a model that individual institutions could use to produce better enrollment projections with a more comprehensive list of variables.

Future research should also include exploring how sensitive yield rate and applications are to crime statistics as the institutional gender breakdown changes. Specifically, women’s institutions or schools that have a predominantly large population of women may be more
responsive to issues surrounding crime. In particular, the amount of sexual violence would be of particular interest in such a study.

This present study found a different relationship between reported crime statistics and the two dependent variables explored. Future research should explore the possible reasons behind this difference. This could be done by examining the timing of when potential students are given Clery Act data and the manner that information is received.

Finally, additional research should include examining campus safety and security from a wider lens than that of published crime statistics. There may be value in a study that examines differences in policy, how campus safety is addressed in recruitment materials, perceived and real barriers to effective reporting, and institutional response protocol when incidents occur. Such a study may provide insight into a broader scope of how institutions define, create, and maintain safe and secure campuses.

Summary

In summary, the relevant finding is that an institution’s yield rate can be predicted, in part, by the campus crime data reported in the corresponding institutional Annual Security Report as mandated by the Clery Act. This study relates to previous research regarding the college choice process, specifically the choice phase. During the choice phase, students will make the ultimate decision to matriculate to a given institution or not. That phase includes students progressing from information gathering to evaluating and synthesizing that information (Hossler & Gallagher, 1987; Nora & Cabrera, 1992). This study provided support to the central premise of the Clery Act by showing crime data can play a part in the decision-
making process of potential students and their families to enroll at an institution of higher education.

The total number of incidents reported appears to not be the sole reason for someone to either matriculate or not. We know from the review of previous research and literature that the college choice process is complex and involves numerous variables. However, the findings do indicate that the total number of incidents may have predictive qualities when combined with other institutional characteristics. Policy makers and the Clery family should take pride in knowing the goal of the Clery Act is, at the least, partially realized. Institutional administrators should take notice that compliance with the Clery Act requirements is crucial in order to avoid misleading any potential student during their college choice process. Additionally, and perhaps most importantly, administrators must continue to prioritize campus security.
APPENDIX A

SCATTERPLOTS FOR APPS DATASET
Scatterplots of residuals against independent variables and predicted dependent variables for the APPS dataset. All predictor variables are included except for the dummy-coding for Carnegie Classification as those data are nominal. The lowest line appears in red.

Figure A.1. Plot of unstandardized residuals and independent variable INCIDENTS_TOT in APPS dataset.

Figure A.2. Plot of unstandardized residuals and independent variable COST_TOT in APPS dataset.
Figure A.3. Plot of unstandardized residuals and independent variable FINAID_TOT in APPS dataset.

Figure A.4. Plot of unstandardized residuals and independent variable EXPEND_STU in APPS dataset.

Figure A.5. Plot of unstandardized residuals and independent variable TUITION_REL in APPS dataset.
Figure A.6. Plot of unstandardized residuals and independent variable SIZE in APPS dataset.

Figure A.7. Plot of unstandardized residuals and independent variable PERC_AI in APPS dataset.

Figure A.8. Plot of unstandardized residuals and independent variable PERC_ASIAN in APPS dataset.
Figure A.9. Plot of unstandardized residuals and independent variable PERC_BLACK in APPS dataset.

Figure A.10. Plot of unstandardized residuals and independent variable PERC_LATINO in APPS dataset.

Figure A.11. Plot of unstandardized residuals and independent variable PERC_WHITE in APPS dataset.
Figure A.12. Plot of unstandardized residuals and independent variable PERC_MULTI in APPS dataset.

Figure A.13. Plot of unstandardized residuals and unstandardized predicted value in APPS dataset.
APPENDIX B

SCATTERPLOTS FOR YIELD DATASET
Scatterplots of residuals against independent variables and predicted dependent variables for the YIELD dataset. All predictor variables are included except for the dummy-coding for Carnegie Classification as those data are nominal. The lowess line appears in red.

Figure B.1. Plot of unstandardized residuals and independent variable INCIDENTS_TOT in YIELD dataset.

Figure B.2. Plot of unstandardized residuals and independent variable COST_TOT in YIELD dataset.

Figure B.3. Plot of unstandardized residuals and independent variable FINAID_TOT in YIELD dataset.
Figure B.4. Plot of unstandardized residuals and independent variable EXPEND_STU in YIELD dataset.

Figure B.5. Plot of unstandardized residuals and independent variable TUITION_REL in YIELD dataset.

Figure B.6. Plot of unstandardized residuals and independent variable SIZE in YIELD dataset.
Figure B.7. Plot of unstandardized residuals and independent variable PERC_AI in YIELD dataset.

Figure B.8. Plot of unstandardized residuals and independent variable PERC_ASIAN in YIELD dataset.

Figure B.9. Plot of unstandardized residuals and independent variable PERC_BLACK in YIELD dataset.
Figure B.10. Plot of unstandardized residuals and independent variable PERC_LATINO in YIELD dataset.

Figure B.11. Plot of unstandardized residuals and independent variable PERC_WHITE in YIELD dataset.

Figure B.12. Plot of unstandardized residuals and independent variable INCIDENTS_TOT in YIELD dataset.
Figure B.13. Plot of unstandardized residuals and unstandardized predicted values in YIELD dataset.
APPENDIX C

SPSS 24.0 SYNTAX USED FOR ANALYSES FOR APPS DATASET
**Dummy coding for Carnegie Classification.**

IF (carnegiegrp_2005 = 1) DC_RESEARCH = 1.
IF (carnegiegrp_2005 ~=1) DC_RESEARCH = 0.
VARIABLE LABELS DC_RESEARCH Dummy coding for Research/Doc Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 2) DC_MASTERS = 1.
IF (carnegiegrp_2005 ~=2) DC_MASTERS = 0.
VARIABLE LABELS DC_MASTERS Dummy coding for Masters Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 3) DC_BACHELORS = 1.
IF (carnegiegrp_2005 ~=3) DC_BACHELORS = 0.
VARIABLE LABELS DC_BACHELORS Dummy coding for Bachelors Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 5) DC_SPECIALIZED = 1.
IF (carnegiegrp_2005 ~=5) DC_SPECIALIZED = 0.
VARIABLE LABELS DC_SPECIALIZED Dummy coding for Specialized Carnegie Classification.
EXECUTE.

**Scatterplot syntax for APPS dataset.**

GRAPH
/SCATTERPLOT(BIVAR)=INCIDENTS_TOTAL WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=COST_TOT WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=FINAID_TOT WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=EXPEND_STU WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=TUITION_RELIANCE WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=SIZE WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PERCENT_AI WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PERCENT_Asian WITH RES_1
/MISSING=LISTWISE.
GRAPH
**Bootstrap regression syntax for APPS dataset.**

```
FREQUENCIES VARIABLES=SIZE_CLASS state oberegion carnegiegrp_2005 
/OPTION=ANALYSIS.

DESCRIPTIVES VARIABLES=APPS INCIDENTS_TOTAL COST_TOT FINAID_TOT EXPEND_STU 
TUITION_RELIANCE SIZE PERCENT_AI PERCENTASIANTOT PERCENT_BLACK PERCENT_LATINO PERCENTWHITE 
PERCENT_MULTI 
/STATISTICS=MEAN STDDEV RANGE MIN MAX.

BOOTSTRAP 
/VARIABLES TARGET=APPS INPUT= INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT 
FINAID_TOT DC_RESEARCH DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENTASIANTOT 
PERCENTBLACK PERCENT_LATINOTOT PERCENTWHITE PERCENT_MULTI 
/CRIPTERIA CILEVEL=95 CITYPE=BCA NSAMPLES=1000 
/MISSING USERMISSING=EXCLUDE.

REGRESSION 
/DESRIPTIVES MEAN STDDEV CORR SIG N 
/MISSING LISTWISE 
/STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP 
/CRIPTERIA=PIN(.05) POUT(.10) 
/NOORIGIN 
/DEPENDENT APPS 
/METHOD=ENTER INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT FINAID_TOT 
DC_RESEARCH 
DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENTASIANTOT PERCENTBLACK 
PERCENT_LATINOTOT PERCENTWHITE PERCENT_MULTI.
```
**Normality of residuals syntax for APPS dataset.
FREQUENCIES VARIABLES=RES_1
   /NTILES=4
   /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM SKEWNESS SESKEW KURTOSIS SEKURT /HISTOGRAM NORMAL /ORDER=ANALYSIS.

**Structure coefficient syntax for APPS dataset.
COMPUTE e = APPS - PRE_1.
EXECUTE.
CORRELATIONS
   /VARIABLES=INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT FINAID_TOT DC_RESEARCH DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENT_ASIAN PERCENT_BLACK PERCENT_LATINO PERCENT_WHITE PERCENT_MULTI APPS PRE_1 e
   /PRINT=TWOTAIL NOSIG
   /MISSING=PAIRWISE.
APPENDIX D

SPSS 24.0 SYNTAX USED FOR ANALYSES FOR APPS DATASET
**Dummy coding for Carnegie Classification.**

IF (carnegiegrp_2005 = 1) DC_RESEARCH = 1.
IF (carnegiegrp_2005 =~=1) DC_RESEARCH = 0.
VARIABLE LABELS DC_RESEARCH Dummy coding for Research/Doc Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 2) DC_MASTERS = 1.
IF (carnegiegrp_2005 =~=2) DC_MASTERS = 0.
VARIABLE LABELS DC_MASTERS Dummy coding for Masters Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 3) DC_BACHELORS = 1.
IF (carnegiegrp_2005 =~=3) DC_BACHELORS = 0.
VARIABLE LABELS DC_BACHELORS Dummy coding for Bachelors Carnegie Classification.
EXECUTE.

IF (carnegiegrp_2005 = 5) DC_SPECIALIZED = 1.
IF (carnegiegrp_2005 =~=5) DC_SPECIALIZED = 0.
VARIABLE LABELS DC_SPECIALIZED Dummy coding for Specialized Carnegie Classification.
EXECUTE.

**Scatterplot syntax for YIELD dataset.**

GRAPH
   /SCATTERPLOT(BIVAR)=INCIDENTS_TOTAL WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=COST_TOT WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=FINAID_TOT WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=EXPEND_STU WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=TUITION_RELIANCE WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=SIZE WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=PERCENT_AI WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=PERCENT_ASIAN WITH RES_1
   /MISSING=LISTWISE.
GRAPH
   /SCATTERPLOT(BIVAR)=PERCENT_BLACK WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PERCENT_LATINO WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PERCENT_WHITE WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PERCENT_MULTI WITH RES_1
/MISSING=LISTWISE.
GRAPH
/SCATTERPLOT(BIVAR)=PRE_1 WITH RES_1
/MISSING=LISTWISE.

**Bootstrap regression syntax for YIELD dataset.**
FREQUENCIES VARIABLES=SIZE_CLASS state oberegion carnegiegrp_2005
/ORDER=ANALYSIS.

DESCRIPTIVES VARIABLES=APPS INCIDENTS_TOTAL COST_TOT FINAID_TOT EXPEND_STU
TUITION_RELIANCE
    SIZE PERCENT_AI PERCENT_ASIAN PERCENT_BLACK PERCENT_LATINO PERCENT_WHITE
PERCENT_MULTI
/STATISTICS=MEAN STDDEV RANGE MIN MAX.

BOOTSTRAP
/SAMPLING METHOD=SIMPLE
/VARIABLES TARGET=APPS INPUT= INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT
FINAID_TOT
    DC_RESEARCH DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENT_ASIAN
PERCENT_BLACK
    PERCENT_LATINO PERCENT_WHITE PERCENT_MULTI
/CITERIA CILEVEL=95 CTYPE=BCA NSAMPLES=1000
/MISSING USERMISSING=EXCLUDE.
REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS CI(95) R ANOVA COLLIN TOL CHANGE ZPP
/CITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT YIELD
/METHOD=ENTER INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT FINAID_TOT
DC_RESEARCH
    DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENT_ASIAN PERCENT_BLACK
PERCENT_LATINO
    PERCENT_WHITE PERCENT_MULTI.
**Normality of residuals syntax for YIELD dataset.
FREQUENCIES VARIABLES=RES_1
   /NTILES=4
   /STATISTICS=STDDEV VARIANCE RANGE MINIMUM MAXIMUM MEAN MEDIAN MODE SUM SKEWNESS
   SESKEW KURTOSIS
   SEKURT
   /HISTOGRAM NORMAL
   /ORDER=ANALYSIS.

**Syntax for structure coefficients - YIELD dataset.
COMPUTE e = YIELD - PRE_1.
EXECUTE.

CORRELATIONS
   /VARIABLES=INCIDENTS_TOTAL EXPEND_STU TUITION_RELIANCE COST_TOT FINAID_TOT DC_RESEARCH
   DC_MASTERS DC_BACHELORS DC_SPECIALIZED SIZE PERCENT_AI PERCENT_AsIAN PERCENT_BLACK
   PERCENT_LATINO
   PERCENT_WHITE PERCENT_MULTI YIELD PRE_1 e
   /PRINT=TWOTAIL NOSIG
   /MISSING=PAIRWISE.
APPENDIX E

SPSS 24.0 SCRIPT USED FOR COMMONALITY ANALYSES
Option Explicit

Sub Main
    getCommonality
    getUserInfo
End Sub

Dim evn As String

Sub md(ByVal evn As String)
On Error Resume Next
MkDir(evn)
On Error GoTo 0
End Sub

Sub getCommonality
    evn = Environ("USERPROFILE")
    If InStr(evn,"and Settings") = 0 Then
        evn = Environ("LOCALAPPDATA")
    Else
        evn = evn & "\My Documents\Downloads"
    End If
    md(evn)
    evn = evn & "\Commonality"
    md(evn)
End Sub

Function Download_File(ByVal vWebFile As String, ByVal vLocalFile As String) As Boolean
    Dim oXMLHTTP As Object, i As Long, vFF As Long, oResp() As Byte
    Dim startTime As Double

    Set oXMLHTTP = CreateObject("MSXML2.XMLHTTP")
    oXMLHTTP.Open "GET", vWebFile, False 'Open socket to get the website
    oXMLHTTP.Send 'send request

    startTime = Timer
    Do While oXMLHTTP.readyState <> 4
        If Timer - startTime > 20 Then Exit Do
    DoEvents
    Loop

    If oXMLHTTP.readyState <> 4 Then tellUser

    oResp = oXMLHTTP.responseBody
vFF = FreeFile
If Dir(vLocalFile) <> "" Then Kill vLocalFile
Open vLocalFile For Binary As #vFF
Put #vFF, , oResp
Close #vFF

Set oXMLHTTP = Nothing
End Function

Sub tellUser
    MsgBox "Timeout accessing profnimon.com"
    Exit All
End Sub

Sub getUserInfo
    Dim strCmd As String
    Dim strPath As String
    Dim strFPath As String
    Dim strOutputSet As String
    Dim strDep As String
    Dim strInd As String
    Dim strDBname As String
    strFPath = GetFilePath(, "sav" , , "Select the SPSS data set file", 0)
    If strFPath = "" Then Exit All
    strPath = Mid(strFPath, 1, InStrRev(strFPath, ")") - 1)
    strDBname = Mid(strFPath, InStrRev(strFPath, ")") + 1)
    strOutputSet = InputBox$ ("Enter your output set name:")
    If strOutputSet = "" Then Exit All
    strDep = InputBox$ ("Enter your dependent variable name:")
    If strDep = "" Then Exit All
    strInd = InputBox$ ("Enter your independent variable names (separated with spaces:")"
    If strInd = "" Then Exit All
    strCmd = "INSERT FILE= " & evn & " \CommonalityCoefficients.sps' CD=Yes." & vbCrLf & strCmd = strCmd & " CD " & " & vbCrLf & strPath & " ." & vbCrLf & strCmd = strCmd & " !cc dep= " & strDep & vbCrLf & strCmd = strCmd & " db = " & strDBname & vbCrLf & strCmd = strCmd & " Set = " & strOutputSet & vbCrLf & strCmd = strCmd & " ind = " & strInd + ")." & vbCrLf
    'strCmd = strCmd & "Get File='" & strPath & strOutputSet & "commonalityMatrix.sav'." & vbCrLf
    'strCmd = strCmd & "DATASET NAME Data" & strOutputSet & " WINDOW=FRONT." & vbCrLf
    objSpssApp.ExecuteCommands strCmd, False
End Sub
REFERENCES


Kalette, D. (1990, September). Campus crime: USA’s bloody secret tranquility is shattered by violence. *USA Today*, 1A.


