

**HUMAN CAPITAL ASSESSMENT INDICATORS AS INFLUENTIAL
DETERMINANTS PERTAINING TO THE ADMISSION CRITERIA UTILIZED BY
PRE-LICENSURE PROGRAMS FOR NURSING EDUCATION**

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The attainment of educational credentials contributes to the acquisition of human capital. Academic preparedness is a component therein that allows for the attainment of increased levels of education. Most institutions of higher education utilize measures of academic preparedness, such as grade point averages or standardized tests. Requirements for the levels of academic preparedness are based upon many factors. The requirements most relevant to this study are the selectivity of the institution and the academic preparedness of potential candidates of pre-licensure programs for nursing education.

The pre-licensure education of nurses is enigmatic when compared to other professional disciplines. Pre-licensure education for registered nurses exists in three distinct and differently classified programs: a hospital-based diploma program, an associate degree program, or a baccalaureate program. (There is an additional baccalaureate program, known as accelerated second degree programs, for students possessing a baccalaureate degree in another discipline. These accelerated programs are not included in this discussion.) The National Center for Education Statistics classifies each of the three programs, making clear that the differing program levels of post-secondary education are neither equivalent nor interchangeable.

According to the literature, the academic preparedness of individuals and the level of selectivity of higher education institutions vary greatly depending upon the particular

classification of nursing program. What then, is the level of programmatic selectivity, given that all three pre-licensure programs produce candidates for the identical occupational certification while attracting candidates known to have varying levels of academic preparedness? This study aimed to determine the levels of selectivity of the three pre-licensure nursing education programs types so as identify trends and patterns within and across pre-licensure program types. In order to determine these trends and patterns, the author examined the admissions requirements that are transparent to the public on schools' websites in which these programs are housed, employing the methodology of document analysis. The determination for the level of selectivity was based upon Barron's Measure of Selectivity (Barron's Educational Series, 2011).

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PREFACE

First, I would like to extend my gratitude to my committee members: to my chair, Dr. William Bickel, who guided me with humor and patience; to Dr. Kerr, who provided clarity and direction; to Dr. Weidman, who first taught me about higher education and the global significance thereof, providing me with the necessary context to explore the importance of academic preparedness; and finally, to Dr. Jones, a longtime friend and colleague from my Central Medical Center days, who provided the necessary viewpoint of a nurse. Additional gratitude is extended to Christine Liker, former student colleague, who assisted me with the compilation of my data for more easy analysis. I would like to also thank Dr. Consuela Lewis, who listened attentively to my research ideas, provided much needed insight into policy, and encouraged me to “forge my own path” in the direction my research took.

I would especially like to thank my now deceased parents, Frank J. Sr. and Madeline Kahl Zrust. My mother, who completed a two-year high school course in the 1930s, insisted to “always take an academic curriculum” (how did she know this?), and told me “don’t get married till you’re out of college; finish your education first.” My father, an immigrant from what is now the Czech Republic, left school after the eighth grade to begin work. However, he taught himself about radio with the help of correspondence courses and learned Morse Code from instructional records. In our home, education and college specifically, was a necessity, not a luxury. My

father cautioned “always have your walking papers” so that you have the necessary degrees and credentials to make yourself marketable in the areas that you wish to be. It is safe to say that my parents were both visionaries in terms of higher education, given the time from which they were, and the fact that they embraced this concept not only for their two sons, but for their only daughter as well. It is regrettable that neither of my parents lived to see me graduate with any of my degrees.

I would like to thank my sons, Justin and Thomas O’Connor for having endured the chaos of my attending school. I am proud of your individual accomplishments in education thus far. My wish is for you both to have, like me, the highest degree in the land. Finally, to all of my friends, who have listened to endless diatribes about pre-licensure nursing education and academic preparedness, thank you for your support and patience.

1.0 INTRODUCTION

The purpose of this dissertation is to examine the admissions criteria used by pre-licensure programs of nursing education. It is important to understand specifically which criteria are used and whether those criteria reflect highly selective measures or lesser selectivity measures. This topic is important because of the increased need for highly educated workforce (Schiff, 2008) as well as the need for students to be successful (i.e., students graduate from the higher education institution in which they enrolled). Additionally, it is important to recall that nursing education exists not only in four-year colleges and universities, but also in two-year colleges and others schools with programs with less than a two-year tenure known as hospital-based diploma programs (HBDPL). The sections of this dissertation are centered on the importance of higher education, the K-12 pipeline, and academic preparedness for college level work and the criteria by which these programs are measured. Additional sections will address the differences of nurses as identified by pre-licensure programs type and the importance of the theory of human capital as it relates to academic preparedness and program selectivity. The contextual aspects of policy and societal influences will be threaded throughout the text.

1.1 THE IMPORTANCE OF EDUCATION

“Educational attainment has become the primary route to occupational attainment in modern industrial societies” (DiMaggio & Mohr, 1985, p. 1233). Furthermore, education has been found to improve status as well as culture by creating the ability to “sustain relationships with those in control of the allocation of rewards that constitutes the stratification process” (DiMaggio & Mohr, 1985, p. 1236). Additionally, the Organisation [sic] for Economic Co-operation and Development (OECD) “has emphasized the role of education and human capital in driving economic and social development” (Gurria, 2011, p. 11) in any country.

According to Cabrera, Burkum, and LaNasa (2005), the view of the bachelor’s degree has changed over time:

A bachelor’s degree is no longer considered a potential stepping stone to a better life. It is the gatekeeper to myriad social and individual benefits, ranging from income, employment stability, and *occupational prestige* [emphasis added] to engagement in civic and political activities.” (p. 155)

In the United States, college completion has risen substantially from 26.2% of those persons born between 1933 and 1942 to 41.1% for those persons born between the years of 1975 to 1984 (OECD, 2011) . Thus, as of 2009, two of five persons aged 25 to 34 possess the human capital of a bachelor’s degree.

With specifics regarding the education of health care professionals, Schiff (2008) stated that “a healthy nation depends on the adequate supply of well-educated and well-trained health professionals” (p. 1). While not speaking directly to, but certainly inclusive of, the nursing profession, Schiff highlighted numerous contributing factors that affect the current and predicted nursing shortage. Critical to this work on academic preparedness and pre-licensure education,

Schiff (2008) addressed the *varied levels of preparation for nursing education* [emphasis added] as a contributing obstacle to an educated nursing workforce.

The profession of nursing currently supports the existence of three differing and clearly distinct pre-licensure programs for candidates seeking to become registered nurses: a hospital based program that issues a diploma (HBDPL); a two-year program issuing an associate's degree (AD), and a four-year baccalaureate degree program issuing a bachelor's of science in nursing (BSN). There is also a foreshortened and accelerated baccalaureate program for candidates already possessing a baccalaureate degree known as a "second degree programs." Candidates from the second degree programs are not be discussed specifically in this work, as these candidates are known to already possess the human capital of a bachelor's degree prior to entry into a baccalaureate nursing program.

The remainder of this chapter will cover the importance of academic preparedness in an individual's efforts for academic success. Additionally, the topic of admissions criteria for higher education as it relates to institutional selectivity and the academic preparedness of the institution's applicant pool will be discussed. The importance of all of these topics as they relate to pre-licensure nursing education will be threaded throughout each section.

1.1.1 The Advancement of Education

In the post-industrial period, the knowledge bases of specific disciplines have expanded exponentially, such that the term "*knowledge economy*" has evolved. Powell and Snellman (2004) "define knowledge economy [as] production and services based upon knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence" (p. 199). The authors asserted "the key component of a knowledge

economy is greater reliance on intellectual capabilities than on physical inputs or natural resources” (Powell & Snellman, 2004, p. 199). To ensure the adequacy of well-trained health professionals in a knowledge economy, disciplines considered to be professions, rather than vocations or occupations, require a baccalaureate degree at a minimum for entry into practice.

For example, in the latter part of the Twentieth Century, some professions in healthcare parallel to nursing (e.g., physical therapy and pharmacy), advanced the requirement for pre-licensure education to beyond that of a bachelor’ degree for entry into practice:

The Commission on Accreditation in Physical Therapy Education (CAPTE) ...accredits first professional (entry-level) programs in the U.S. for the physical therapist at the master's and doctoral degree levels and programs for the physical therapist *assistant at the associate degree level* [emphasis added].” (Commission on Accreditation in Physical Therapy Education [CAPTE], 2013)

Similarly, within the profession of pharmacy, the American Association of Colleges of Pharmacy (AACP) formed the Commission to Implement Change in Pharmaceutical Education in 1989). This Commission concluded that a typical Pharm-D obtained in five years of schooling *was not adequate* and that an additional year of schooling was necessary (Commission to Implement Change in Pharmaceutical Education, 1989). Based on the premise that pharmaceutical education is a result of “developing and promoting new knowledge through the scientific process” (p. 1), the Commission concluded that the new degree would be titled Doctor of Pharmacy and that all programs offering pharmacy education implement this degree by the 1994-1995 academic year (Commission to Implement Change in Pharmaceutical Education, 1989).

Contrary to the proactive advances in pre-licensure education for the professions of pharmacy and physical therapy, the profession of nursing persists in the support of three different

and clearly distinct pre-licensure programs for candidates seeking to become registered nurses. It is of importance to note that the HBDPL program was initiated during the 1880s as a means for hospitals to ensure a readied workforce. The associate degree (AD) programs surfaced with the emergence of community colleges and the move for vocational education. However, in 1919, the University of Minnesota implemented the first baccalaureate program for the study of nursing (i.e., the B.S.N.) in an attempt to move the education of nurses out of the hospital and into an institution of higher education (University of Minnesota School of Nursing, 2013). Thus, the HBDPL, A.D., and B.S.N. programs and their processes for pre-licensure nursing education are anomalous.

Interestingly, 24 years before the AACN initiative, the American Nurses Association (ANA) issued its first position on education for nursing in 1965. The ANA is a national level professional body that promotes and advances initiatives regarding nursing; however, unlike CAPTE and the AACN, ANA does not provide accreditation to educational institutions (ANA, 2013). Included in the 1965 position paper is the conclusion that “*education for those in the health professions must increase in depth and breadth as scientific knowledge expands*” [emphasis added] (ANA, 1965, p. 106). In conjunction with these concerns, the ANA stated that as an organization, it must be concerned with “the means for improving nursing practice [and] the education necessary for such practice” (ANA, 1965, p. 106). To support their position, the ANA recognized that the profession of nursing had seen great changes in the two decades prior to 1965, and these changes led the ANA to assert that “*the education for all those who are licensed to practice nursing should take place in institutions of higher education* [emphasis added]” (ANA, 1965, p. 107). In other words, ANA articulated the need for nurses’ training to

move out of the hospital-based, skills-oriented, apprenticeship model of training nurses and into a college setting.

Pertaining to associate degree programs for nursing education, the ANA stated that this level of education should be for the licensed practical nurse (LPN) (ANA, 1965, p. 108). Practical nurse training, meant to train a technical assistant to the professional nurse, was typically one year in length in 1965. The ANA felt that the “minimum training for beginning technical nursing practice at the present time should be associate degree education in nursing” (ANA, 1965, p. 108), thus advancing practical nurse training from a one-year program to a two-year associate degree level. The placement of a technician level nurse into an associate degree program is similar to the profession of physical therapy for which “CAPTE accredits ...programs for the physical therapist *assistant at the associate degree level* [emphasis added]” (CAPTE, 2013). Hence, associate degree nurses training programs were not designed to be an alternative educational tract for a professional, registered nurse, but rather as an improved course of study for the vocational or technical nurse who practiced under the direction of the registered nurse.

Mildred Montag created the associate degree nursing program as an intervention to alleviate a nursing shortage that resulted from World War II (Hannik, n.d.). Montag created these two-year programs as a viable shorter program to the then three-year HBDPL programs, which was the industry norm at the time (Hannik, n.d.). Then, as in 1965, associate degree programs were not meant to replace baccalaureate programs (Boyd, 2011). In defense of the changes to traditional nurse preparation, the ANA stated that the registered nurse:

...is now being required to master a complex, growing body of knowledge and to make critical, independent judgments about patient care. Therefore, the *minimum preparation*

for beginning professional nursing practice at the present time should be *baccalaureate degree education in nursing* [emphasis added]. (1965, p. 108).

Hence, the four-year degree became the expected preparation program to obtain the title of registered nurse.

Given the trends of the knowledge economy, it is critical to the profession of nursing to explore the levels of academic preparedness for candidates of programs that were to be made obsolete for registered nurses. With the continued expansion of the “complex, growing body of knowledge” that has specifically evolved in health care since 1965, as well as the resulting increased need for nurses “to make critical, independent judgments about patient care,” it is important to determine if there are differences in the admissions process with regard to academic preparedness for each of the three pre-licensure program types.

In the following sections, the importance of academic preparedness and the measures used to assess this preparedness will be discussed. Additionally, the importance of academic preparedness as it relates to institutional selectivity and an individual’s likelihood of academic success will be explained. Since pre-licensure programs for nursing education exist in three dissimilar programs, the similarities and/or differences of academic preparedness between baccalaureate and non-baccalaureate programs will be presented.

1.1.2 Academic Preparedness and the College Admissions Process

The college admissions process is a phenomenon that consumes prospective students, and for traditional age students, it likely consumes their parents as well. Preparation begins well in advance of a potential applicant’s senior year of high school. High school guidance counselors, teachers, and parents emphasize academic excellence and offer advice regarding which

extracurricular activities will assist students in gaining acceptance into a chosen college or university. Additionally, students with intentions of attending institutions of higher education may take a standardized admissions test such as the Scholastic Aptitude Test (SAT) or the American College Test (ACT). Such admissions tests are benchmark industry standards indicative of academic preparedness.

In response to the voluminous amount of admissions applications, colleges and universities must sift through the thousands of applicants to select candidates who, in addition to meeting mission specific criteria, are reasonably likely to be academically successful. Furthermore, programs and schools within a university may have specific admissions criteria as dictated by a discipline's professional standards and/or academic rigor. Music, engineering, and nursing are examples of discipline-specific programs. While music candidates may be required to audition as part of the admissions criteria, an engineering student may need higher than average math scores on standardized tests, hence demonstrating the ability to perform academically and indicating the likelihood of success in the program. "Among students intending to major in the physical sciences, mathematics, and engineering, which are among the most competitive academic disciplines at UC [University of California]," it was found that the SAT II subject tests, which test for specific knowledge by subject such as calculus, "were consistently the stronger predictor of student performance at UC than the SAT I" (Geiser & Studley, 2002, pp. 8-9). Thus, institutions of higher education and individual disciplines use a wide array of criteria (e.g., standardized test scores, GPA, performance, etc.) to determine which of the applicants are admitted based on their likelihood of academic success in the specific programs (e.g., college GPA and program completion). One of the many outcome measures by which to assess programmatic success at the collegiate level is the successful passing of a

licensing exam necessary for practice within a discipline, such as the National Council Licensing Exam for Registered Nurses (NCLEX-RN). Passing these licensure exams is not only a measure of student success, but it is also indicative that the institution's educational standards were sufficient so as to graduate successful individual candidates.

Since World War II, college has become the gold standard of post-secondary or tertiary education globally. The significances of a baccalaureate level of education over other forms of post-secondary education “that are established, such as the ability to critically think” while teaching “that which “an *educated person* should know” [emphasis added] and emphasizing “study in a discipline” (Schneider, 2009, p. 3). However, as Schneider (2009) noted during the Annual Meeting of the Southern Association of Colleges and Universities Commission on College, the established educational practices of a college or university are further evolving beyond that of subject matter, to include:

...emphasis [on] how to find and evaluate needed information; links critical thinking to real-life problems; and examines and engages with a range of cultures, cultural complexity and global issues.... inquiry and analysis, critical and creative thinking, written and oral communication, quantitative literacy, information literacy [and] team work and problem solving as well as integrative and applied learning...[to be] demonstrated through the *application of knowledge, skills and responsibilities to new settings and complex problems* [emphasis added].” (pp. 3-4)

Pre-licensure nursing programs at the four-year college or university level result in the conferring of a bachelor's of science in nursing (B.S.N.). As the name of the degree states, nursing is a discipline of science and a profession by which “the permission for work in an occupation may even be legally bound to the prior acquisition of a respective certificate,

particularly in the medical, juridical or teaching professions” (Müller, Lüttinger, Köenig, & Karle, 1989, p. 7). Permission to be licensed in a state is dependent upon successful passing of the licensing examination (i.e., the NCLEX-RN), and all three pre-licensure programs prepare a graduate to sit for this identical qualification destination (Müller et al., 1989).

While the NCLEX-RN test is created and administered by the National Council of State Boards of Nursing, it is of importance to note, however, that nursing licenses are issued and regulated by each individual state. Thus, the profession of nursing is regulated by individual state’s legislative laws as well as administrative law that stems from a state’s board of nursing. For example, in the Commonwealth of Pennsylvania, the legislative law that applies to nursing is Chapter 21 of The Pennsylvania Code (49 Pa. Code § 21, 2010), (Please see Appendix A and B for excerpts from the PA Code in regards to Selection and Admissions Standards (2010) and Curriculum for Baccalaureate, Associate Degree, and Diploma Programs (2010), respectively). The administrative law is the Nurse Practice Act, issued forth by the Pennsylvania State Board of Nursing (State Board of Nursing, 2010). These administrative laws provide guidance and mandates relating to the licensure of registered nurses and the programs for pre-licensure education.

Chapter 21 of the Pennsylvania Code established that there may be very differing admissions criteria by pre-licensure program type, and the Commonwealth, while providing guidelines, defers admissions standards to the individual institutions (State Board of Nursing, 2010). These standards are based upon the admissions and programmatic criteria for each level of the pre-licensure nursing education guidelines set forth by 49 Pa. Code § 21 *et seq.*. In § 21.101, the Pennsylvania Code provides the following standards for admission:

- “Policies and procedures related to the selection and admission of students are the *responsibility of the individual school* [emphasis added]. Consideration shall be given to scholastic aptitude, academic achievement...,” and
- “Students admitted to baccalaureate and associate degree programs shall meet the requirements for admission to the university or college and additional requirements that may be established for the nursing major” (Selection and Admissions Standards, 2010).

An applicant to a pre-licensure program for nursing education must meet both state and institutional guidelines for admission. While the state standards remain constant, admissions criteria may differ between various colleges or universities within the state. Additionally, programmatic criteria for nursing admissions may be confusing, given that pre-licensure programs for nursing education are situated in differing classifications of institutions.

1.1.3 Relevance of Admissions Criteria to Program Completion

Much is written about criteria that is currently utilized for the admissions process in higher education institutions (HEIs) and “currently, a national debate rages over what constructs to use when choosing college applicants” (Robbins et al., 2004, p. 262). The debate over constructs at the college level raises questions as to which constructs are used by the three differently classified pre-licensure programs for nursing education. That is, do the non-baccalaureate programs follow college level admissions processes, or are there differing criteria entirely? The importance of college-level admissions processes as it relates to college and/or programmatic success will now be discussed.

Traditionally, HEIs utilize a combination of high school grade point average (HSGPA) and standardized testing, such as the Scholastic Aptitude Tests (SAT) or the American College Test (ACT) (Robbins, Allen, Casillas, Peterson, & Le, 2006). Standardized testing, also known as “high stakes testing,” when combined with high school performance is said to “account for approximately 25% of the variance when predicting first-year college GPA” (Robbins et al., 2004, p. 262). If a debate exists over best admissions criteria for HEIs, questions arise as to the consistency and uniformity regarding the admissions criteria for nursing programmatic admissions. This process of pre-licensure programmatic admissions process is further complicated by differing administrative guidelines for admission and program criteria by the Commonwealth of Pennsylvania. Given that the pre-licensure programs of instruction vary in length and content, questions must be raised as to the appropriate constructs to be used when selecting applicants to ensure equivocacy for the profession.

Of the first-time students who entered *any* baccalaureate program (i.e., not specifically nursing) in 2002, only 57% attained degree completion in a six-year period (U.S. Department of Education, National Center for Education Statistics, 2011). Additionally, there were varying rates of success depending upon institutional control. Public not-for-profit institutions saw six-year degree completion rates of 55%, however, private not-for-profit institutions showed somewhat more success at 65% (U.S. Department of Education, National Center for Education Statistics, 2011). Private for-profit institutions demonstrated a bleak 22% six-year degree completion rate (U.S. Department of Education, National Center for Education Statistics, 2011).

Stated differently, almost half of students in a public not-for-profit institution and more than one-third of students who attend private not-for profit institutions will have unrealized goals and aspirations by failure to complete college. Loss of revenue notwithstanding, the loss of

nearly one-third to one-half of a general freshman class poses serious questions for the traditional not-for-profit institutions regarding success and attrition. Stakeholders (e.g., students, parents, and alumni) may find particular concern with such low rates of success. Legislative stakeholders who must approve funding for such public institutions may take exception to increasing funds to an institution where only one of every two students is likely to attain a degree in a six-year period.

1.1.4 Importance of Admissions Practices

The admissions process of any given educational institution, or a specific program within the institution, should reflect practices that are most likely to ensure success for admitted students. Sound admissions practices emphasizing student success are a beneficial strategy to reduce institutional costs associated with attrition, such as lost revenue. From the student perspective, the student may benefit from an institution's admissions practices promoting the idea of "good fit" (DesJardins, Dundar, & Hendel, 1999). "Lack of congruence between students' abilities and academic rigor expected by a HEI, may render recruitment strategies ineffective and retention problems may ensue" (DesJardins et al., p. 117).

Another aspect of institutional and student success to consider is a lack of congruence between institutional academic rigor and criteria demanded by an accrediting or licensing agency, such as the graduates' successful passing of the NCLEX-RN. Lack of institutional rigor may reflect lower levels of admissions requirements focusing on academic preparedness, which may thwart successful graduates of a discipline-specific program from realizing the ability to become licensed. For example, a small, private and religious liberal arts college in southwestern Pennsylvania, henceforth known as Institution I, defined a good fit in the academic sense as a

GPA of 2.0 and a SAT of no less than 800 for combined Math and Critical Reading Scores (of a total combined score of 1600) (D. McFarland, personal communication, November 28, 2011). However, for this same college, which houses an associated degree program for nursing education, the program-specific admissions for nursing is an SAT score is 1000 (D. McFarland, personal communication, November 28, 2011). Since one measure of programmatic and student graduate success is the successful passing of the licensing exam for the first time candidates, it is important to note that the institutional success rate was 63.16%, 66.67%, and 72.22% respectively for the calendar years of 2008, 2009 and 2010 (Commonwealth of Pennsylvania, 2012).

As a comparison to Institution I, a competitor college, henceforth known as Institution II, that houses a baccalaureate program in nursing, had admissions criteria stating that incoming students either score a 1000 on the SAT and a GPA of 3.0, or score a 950 on the SAT of 950 and a GPA of 3.2 (C. Fickley, personal communication, March, 2011). Even with these required scores for admissions, 75% of Institution II's nursing students test into remedial math (C. Fickley, personal communication, March, 2011). In comparison to the Institution I, the NCLEX-RN successful first time pass rates for Institution II were 89.36%, 74.14%, 83.33% and 78.05% for the calendar years of 2008, 2009, 2010 and 2011, respectively (Commonwealth of Pennsylvania, 2012).

As a benchmark comparison, the PA Code Chapter 21 was amended in 2008 to progress from an approved institutional pass rate on the NCLEX-RN for 60% of first-time candidates to an institutional pass rate for first-time candidates to that of 80% as of 2010 (Curriculum for Baccalaureate, Associate Degree, and Diploma Programs, 2010). As seen with Institutions I and II, admissions standards may have contributed to the lack of congruence between the institution

and the expectations of the licensing agency. This lack of congruence was realized by producing varying and often ineffective rates of success on the NCLEX-RN, realizing institutional failure more often than not, irrespective of the fact that each institution's educational treatment differs. Of more concern is a discipline that has specific programmatic instruction that graduates a significant numbers of candidates who cannot successfully pass the licensing exam.

Although the Commonwealth of Pennsylvania sets the industry standard at an 80% pass rate for first-time test-takers from a pre-licensure program of nursing education, it still permits a 20% failure rate, such that one in five candidates may fail the NCLEX-RN the first time. Thus, Institution I did not meet the 2010 Commonwealth's standard three out of four years, while Institution II fell short of success in two out of four of the most recent years. Whereas Institution I is an AD program and Institution II is a BSN program, both have similar admissions standards even though their educational treatment differs. While candidates of each of these two programs successfully completed the process of instruction to sit for the licensing exam, a large proportion of the candidates did not demonstrate an adequate knowledge base required for success on the NCLEX-RN.

Students select an institution of higher education based upon a number of reasons, which will be addressed at a later point in this narrative. Program-specific selection criteria for potential students, such as is for nursing or engineering, follows similar trajectories as institutional selection. However, the institutions and/or programs themselves must also select the students based upon a number or reasons, one of which would likely be to ensure some level of academic success and, most importantly, to pass a necessary licensing exam.

HEI's also have a vested interest in understanding the factors that influence students' application and enrollment decisions in order to attempt to increase the "fit" between students

and the institution (Desjardins et al., 1998). As such, HEIs use numerous measures during the admissions process. In terms of academics, the most commonly used measures of academic preparedness include the use of Scholastic Aptitude Tests (SAT I and SAT II tests), the ACT, and high school grade point averages (Camara & Echternacht, 2000; Desjardins et al., 1998; Geiser & Studley, 2000; Habley & McClanahan, 2004; Linn, 1990; Noble & Sawyer, 2002; Robbins et al., 2004; Robbins et al., 2006; Rothstein, 2004). The importance and significance of these measures will be individually reviewed in the section about Human Capital Assessment Indicators.

1.1.5 Relevance of Institutional Selectivity to the Admissions Process

The selectivity of an institution of higher education is important for the institution, as well as prospective applicants, as the front cover of Barron's 29th Edition states that the "exclusive selector rating tells you what you need to get into the school of your choice" (Barron's Educational Series, 2011). According to Pascarella et al. (2006), "the academic 'selectivity' of a college or university's undergraduate student body has been [perhaps] the most common single criterion by which the public, as well as many scholars, *make inferences about the 'quality' of the undergraduate education one receives* [emphasis added]" (p. 251). While acknowledging that there are many measures that could define the selectivity of an institution, Pascarella et al. (2006), stated that which is most generalizable "and perhaps the most easy to understand, is the average or median score of entering or enrolled students on standardized tests such as the ACT, SAT, or their equivalent" (p. 251). Furthermore, the required SAT scores for admissions of the institutions with the highest selectivity had average score of 1400,

based upon a total score of 1600, which is very similar to Barron's criteria for highly selective institutions (Pascarella et al., 2006).

As a guidebook for prospective students and their parents, *Barron's Profiles of American Colleges* (Barron's Educational Series, 2011) provides a college admissions selector that categorizes four-year colleges and universities based upon selectivity. Six classifications range from "most competitive" to "noncompetitive." The specifics of Barron's Measure of Selectivity are provided in Appendix C. For the category of most competitive, "even superior students will encounter a great deal of competition for admission to the colleges in this category" while noncompetitive institutions "generally only require evidence of graduation from an accredited high school" (Barron's Educational Series, 2011, p. 249). Barron's rates only four-year colleges and universities.

Carnevale and Rose (2003) explained that the benefits of attending selective institutions include higher graduation rates, higher wages upon graduation, and better access to graduate education. Both Carnevale and Rose (2003) and Pascarella et al. (2006) noted that highly selective colleges have a self-perpetuating image by attracting high quality students, which in turn maintains the high quality of the institution. Having an academically selective student body not only exposes the students to like-minded and equal-intellect peers, but this phenomenon also permits the faculty to have increasingly high expectations of the students (Pascarella et al., 2006). The concept of having high expectations for students is cited as one of the many that are "good practices in undergraduate education" (Pascarella et al., 2006, p. 254). While institutional selectivity does not guarantee good teaching practices by the institution, it is perhaps the qualities of the students themselves that contributes largely to desirable outcomes, such as high graduation rates.

Camara and Echternacht (2000) noted that the mean SAT verbal or math score for a highly selective college was 650, with a range of 300 to 800; however, the distribution of scores is *skewed above a score of 500* [emphasis added]. Conversely, Camara and Echternacht (2000) noted that the mean score for a national cohort of college bound seniors was 500 with a typical bell curve distribution ranging from 200 to 800. However, the ranges of “admission test scores and high school grades of the students attending a specific college is *typically much narrower than the range of test scores or grades submitted by the larger applicant pool for the college* [emphasis added]” (Camara & Echternacht, 2000, p. 1). Noble and Sawyer (2002) found this phenomenon to be true for ACT scores and HSGPAs as well. Thus, higher HSGPAs and standardized test scores may well be a proxy for adequate motivation to prepare for college, thereby making it a proxy measure of equally adequate study skills. On the other hand, lower HSGPAs and standardized test scores reflect “inadequate preparation for college, and poor study skills” (Habley & McClanahan, 2004, p. 6). “Just 2 percent of students who scored in the lowest SAT quartile had completed rigorous academic curricula, compared with 44 percent who scored in the highest SAT quartile” (Horn, Kojaku, & Carroll, 2001, p. 11). Hence, rigorous academic curricula are associated with higher standardized test scores.

1.1.6 Relevance of Academic Preparedness to Academic Success

The preparation for college begins in high school. College preparation is now also known to begin as early as the eighth grade (Cabrera et al., 2006) by taking algebra I (Horn & Nuñez, 2000, p. 15). Completion of algebra I in the eighth grade correlates with enrollment in, and completion of, non-basic high school math classes (Horn & Nuñez, 2000, p. 17). Academic preparedness in high school has been linked to a strong and rigorous curriculum that includes

higher-level math classes (e.g., algebra II and geometry) as opposed to general math classes (Perna, 2005). Lower level math classes in high school are a “dead end” and “students in the general track take fewer and easier math courses and score lower on achievement tests compared with those in the college-bound track” (White, Gamoran, Smithson, & Porter, 1996, p. 285).

“Students who took advanced mathematics courses in high school were very likely to enroll in a 4-year college. Nearly two-thirds of first-generation students did so, as did 85 percent of students whose parents were college graduates” (Horn & Nuñez, 2000, p. 47). Thus, irrespective of a chosen college major, academic rigor and higher-level math classes in high school are associated with enrollment in college, especially a four-year college. Of the remaining students who pursued any other form of post-secondary education, the percentage of enrollment increased respectively with the numbers of higher-level math classes taken in high school (Horn & Nuñez, 2000, p. 57).

Conversely, a less rigorous high school track or a vocational course of education at the secondary level have been known to thwart educational outcomes geared for the post-secondary level of education, specifically at the college level:

Vocational tracks inhibit further educational attainment in several ways. First, attending a class alongside highly motivated and academically successful students enhances one’s own chances of success (Coleman, et al., 1966; Hallinan & Williams, 1990). Because vocational tracks are usually attended by academically weaker students, they are deprived of the beneficial effect of a more favorable milieu. Second, vocational tracks offer a more restricted curriculum (Gamoran, 1987; Oakes, 1985) and their students are less likely to take advanced courses. Third, in the less selective tracks, less time is devoted to actual

instruction (Oakes, 1985), and instruction is conducted at a lower level of intellectual complexity (Metz, 1978). (Shavit & Muller, 2006, p. 439).

Shavit and Mueller (2006) analyzed the educational qualifications of vocational secondary education as it relates to social stratification by use of Erikson and Goldthorpe's (1987a) Comparative Analysis of Social Mobility in Industrialized Societies Educational Schema (CASMIN). It was concluded that the differentialization in the amount and type of education that is received, known as *credentialism*, "appears to be crucial for the effects of education on social mobility" (Shavit & Muller, 2006, p. 9) while noting "the significance different systems of credentials have in allocating people to class positions" (Müller et al., 1989, p. 7). For pre-licensure nursing education under the CASMIN Education Schema, the HBDPLs and AD nursing programs fall into this category of *lower level tertiary degrees*: "Lower level tertiary degrees, generally of shorter duration and with a vocational orientation (e.g., American junior colleges, technical college diplomas, social worker or, nonuniversity teaching certificates)." (Shavit & Muller, 2006, p. 9)

As per Shavit and Muller (2006), these pre-licensure programs of nursing education not only provide less in the amount of actual education, but also relegate their graduates to a lower stratification of class. The lower stratification of class applied to non-baccalaureate graduates may carry over to the profession or occupation in which they are employed, given that 45.4% of nurses nationwide, in 2008, were educated at the associate degree level (NSSRN, 2008). By comparison, only 1.21% of nurses were educated at the AD level as noted from the initial NSSRN in 1980 (U.S. Department of Health and Human Services, 2010). Erikson and Goldthorpe (1987) differentiated social class by occupation. At the top of the schema is the "service class," which is subdivided into two different classes. Class I is defined as "higher-

grade professionals, administrators and officials; [and] managers in large industrial establishments; large proprietors” whereas Class II is defined as “lower-grade professionals, administrators and officials; higher grade technicians; managers in small industrial establishments; [and] supervisors of non-manual employees.” Erikson and Goldthorpe (1987a, p. 58). Subsequent classifications speak to forms of manual and non-manual labor. However, all of classifications defined by Erikson and Goldthorpe (1987a) categorized persons by occupation as well as alluding to the level of education that might be necessary to hold these positions. Etzioni (1969) included nurses in the group that he identified as the “semi professions,” stating that “their training is shorter, their status is less legitimated...there is less of a specialized body of knowledge, and they have less autonomy from supervision or societal control than “the ” professions” (p. v).

Baccalaureate education, as classified by the CASMIN Education Schema, is “the completion of a traditional, academically oriented college or university education, and would tend to situate graduates in Erikson and Goldthorpe’s (1987a, p. 58) Class I category of “higher-grade professionals.” Conversely, HBDPL and A.D. nursing programs more realistically relegate their graduates to the Class II (i.e., lower-grade professionals and higher-grade technicians), which may serve to perpetuate the “semi-profession” classification for nursing. Thus, in a global economy, it is critical to understand global definitions of higher education and the associated class stratification therein.

1.1.7 Operational Definitions of College-Level Academic Preparedness

A review of the literature revealed that college-level academic preparedness occurs at the high school level. An operational definition for college preparation trajectory exists as follows: “The

high school academic curriculum measure identifies three levels of coursetaking: (1) core curriculum or below, (2) mid-level, and (3) rigorous” (Horn et al., 2001, p. iii). Details for each level can be found in Appendix D. The rigorous curriculum was created to academically prepare students on a college-bound trajectory (Horn et al., 2001).

The ability to gain entrance into a college of one’s choice and specifically to a college of increasing academic selectivity is established at the high school level. “How well students scored on their SAT entrance exams was strongly associated with the level of high school academic curricula they had completed” (Horn et al., 2011, p. 11). Similarly, Perna (2005) asserted that:

The consistently strong relationship between academic preparation and college enrollment found in prior research demonstrates that academic preparation must be a central component of any academic preparation program. Researchers have consistently shown that academic preparation and achievement are important predictors of both predisposition toward, or interest in, attending college and actual college enrollment. (pp. 114-115)

Academic preparedness at the high school level is crucial, not only in the admissions process, but in persistence to college graduation. The NCES (2013) found that “approximately 58 percent of first-time, full-time students who began seeking a bachelor’s degree at a 4-year institution in fall 2004 completed a bachelor’s degree at that institution within 6 years” (p. 18).

When examining degree progress and the high school backgrounds of college students, Horn et al. (2001) reported that:

as of 1998, the vast majority (87%) of those who had participated in rigorous high school academic curricula were still on track to a bachelor’s degree,

compared with 71% of those in mid-level curricula, and 62% of those who completed core curriculum or lower. (p. v)

Given the documentation of the critical aspect of academic preparedness necessary for academic success at the college level, it is of importance to note the Selection and Admission Standards (2010) in the Pennsylvania Code that fail to reconcile with the rigorous high school curriculum necessary for academic success at the college level. As can be seen in Appendix D, the admissions guidelines for pre-licensure programs of nursing education fall one unit short in each area of math and science for that which is necessary for the core curriculum. Thus, these admissions guidelines do not meet 1983 standards for college preparation. The Commonwealth's admissions standards for pre-licensure nursing education have not been updated since 1983.

1.1.8 Conclusion

As stated by Schiff (2008), "a healthy nation depends on the adequate supply of well-educated and well-trained health professionals" (p.1). In most countries, academic education at the secondary level prepares students for college or university, whereas vocational education prepares them for immediate entry into the labor market and "teaches skills that can easily be acquired on the job rather than through schooling" (Shavit & Muller, 2006, p, 437). At the post-secondary level, according to The CASMIN Educational Schema, the HBDPL and AD programs produce "lower-level tertiary degrees, generally of shorter duration and with a vocational orientation (e.g., American junior colleges, technical college diplomas, social worker or, non-university teaching certificates)"; as a non-equivalent entity with lesser academic requirements

and academic rigor than the “completion of a traditional, academically oriented college or university education” (Shavit & Muller, 2006, p. 445).

The attainment of education and knowledge is important for the achievement of individuals, professions, and society in general (Müller et al., 1989). Given this information on the lack of standardization in the pre-licensure educational process for registered nurses, one must question how the differing programs for pre-licensure nursing education ensure *equivalent levels* of academic preparedness that is necessary to ensure academic success via admissions criteria alone. These criteria seem to pose more questions than answers when considering the differences between the status, program of instruction, and classification of nursing pre-licensure programs, not to mention that each program also draws different types of students. What levels of standardized measures of academic preparedness (e.g., SAT scores) do pre-licensure programs of nursing education expect from prospective students, given that the Selection and Admission Standards (2010) of the PA Code are not reflective of guidelines noted to ensure academic success in rigorous college programs, such as is revealed by educational studies? The purpose of this work is to explore the similarities and differences in admissions criteria, as measures of human capital, for each of the three differing program types for pre-licensure nursing education.

1.2 STATEMENT OF THE PROBLEM

In 1965, the American Nurses Association (ANA) recommended the elevation of the pre-licensure education of nurses to that of a professional status, stating that “*the minimum preparation for beginning professional nursing practice at the present time should be*

baccalaureate degree education in nursing [emphasis added]” and additionally stated that the “*minimum training for beginning technical nursing practice at the present time should be associate degree education in nursing*” (ANA, 1965, p. 108). Nearly 50 years after ANA’s recommendations, two major problems still exist. The first problem lies in the perpetuation of three markedly differing classifications of nursing education programs, all of which prepare pre-licensure registered nurse candidate. As has been validated by the literature, academic preparedness of potential candidates varies by the institutional type that is selected (four-year colleges, associate degree colleges, and post-secondary occupational or vocational education). The literature has revealed that students of lesser academic preparedness choose post-secondary institutions that require lesser measures of academic selectivity (Goldrick-Rab, 2006; Perna & Titus, 2004; Paulsen & St. John, 2002; Perna, 2005). As a result, the second problem lies in the potential variances in human, social, and cultural capital possessed by applicants who seek enrollment to the differing program types. Therefore, the second problem for nursing lies in the potential variability of academic preparedness, based on the premise that there are very distinctive attributes between the students (e.g., socioeconomic status) who seek enrollment in each of the differing pre-licensure program type. What then, in nursing, are the admissions criteria used by pre-licensure programs to ensure the selection of equivalently academically prepared students?

If colleges themselves debate about the best measures of academic preparedness from college to college (Robbins et al., 2004), what is the consensus regarding the level of academic preparedness that is necessary for academic success in nursing education programs that are situated in differing classifications of post-secondary institutions? The problem that arises from the potential dissimilarity in academic preparedness is the need for pre-licensure programs of

nursing education to ensure academic preparedness at an equivalent level upon graduation, given that the destination certification is the same (i.e., licensure as a registered nurse). Based on human capital theory, the challenge to ensure congruity of academic preparedness for all candidates must be confronted.

1.3 RESEARCH QUESTIONS

The research study is descriptive in nature and was guided by the following questions:

1. What are the measures utilized to assess academic preparedness, known for the purposes of this study as human capital assessment indicators (HCAIs), utilized by pre-licensure schools of nursing?
2. What is the level of institutional selectivity?
3. Are there differences in admissions criteria by program type?
4. Are there differences in admissions criteria by institutional control?
5. Are there trends and patterns among the findings?

1.4 SIGNIFICANCE OF THE STUDY

The relationships among the variables of socioeconomic status (SES), academic preparedness, selection of post-secondary education type, and success at the college level, in terms of GPA and

graduation, have been established. Given that pre-licensure nursing education exists in three distinctly different categorizations of post-secondary education, the lack of equivalency across programmatic education raises numerous concerns. Concerns about comparable levels of assessment for academic preparedness across program types and the selectivity of these assessment parameters are of primary concern to this study. Selectivity has been deemed to be an important element of success in the math and science fields (Geiser and Studley, 2002); hence, the levels of selectivity as a human capital proxy for an individual candidate's habitus is an important construct to explore, as habitus may result in the distinct differences noted in the literature about nurses from non-baccalaureate programs of preparation. It is also important to understand the levels of selectivity required by pre-licensure programs to determine if those requirements are such that would attract highly academically prepared students, ensuring "the adequate supply of well-educated and well-trained health professionals" (Schiff, 2008, p.1) that is necessary for a "healthy nation".

1.5 ASSUMPTIONS AND LIMITATIONS

Assumptions established for the purposes of this study are as follows:

- The measures by which academic preparedness is evaluated, such as during the admissions process, may include: high school class rank (HSR); high school grade point average (HSGPA); standardized tests (i.e., the SAT or ACT); the SAT Subject Tests (SAT IIs); and/or the writing components of standardized tests, have been

determined as reliable and valid tools to ensure academic success in terms of college GPA, and ultimately, college graduation.

- The nursing specific admissions exams are not as transparent as are the measures of academic preparedness used by four-year institutions and are not equivalent measures when compared with standardized tests, such as the SAT, ACT, SAT Subject Tests (SAT IIs), and/or the writing components of standardized tests.
- Since “cultural capital represents forms of symbolic wealth that are transmitted from upper and middle class parents to their children to sustain class status from one generation to the next” (McDonough, 1997, as cited in Paulsen & St. John, 2002, p. 195), it is assumed that students selecting non-baccalaureate forms of pre-licensure nursing education may possess lesser levels of academic preparedness than students selecting four year programs.
- Information printed in admissions catalogs contain *linguistic registers* and create a *social reality* and a *level of representation* for potential applicants (Atkinson & Coffey, 1998).
- The use of Barron’s Measure of Selectivity as a benchmark tool for selectivity assumes “displays some characteristic features” (Atkinson & Coffey, 1997, p. 53), which may be utilized by potential candidates during the process of institutional selection. Though not designed for the purposes of scholarly analysis, this tool is useful for understanding institutional selectivity.

The limitations established for this study are as follows:

- The results of this study are limited to only one state in the union.

- The admissions criteria as stated by a pre-licensure program of nursing education may not reflect the actual levels of academic preparedness of the students who are in fact admitted to the programs, whether the levels of preparedness be either higher or lower than stated (Atkinson & Coffey, 1997).

1.6 DEFINITION OF TERMS

Habitus: “the internalized system of thoughts, beliefs, and perceptions acquired from the immediate environment, [which] conditions an individual’s expectations, attitudes and aspirations” (Perna & Titus, 2004, p. 506).

High School Grade Point Average: henceforth abbreviated as HSGPA

Higher Education Institution (HEI): For the purposes of this work, a HEI will be considered to be a four-year college or a university, since most two year colleges are community colleges which have an open admission policy.

NCLEX-RN: the National Council Licensing Examination-Registered Nurse is the licensing exam that must be passed prior to obtaining the title ‘registered nurse.’

2.0 LITERATURE REVIEW

In reviewing the literature, the author focused on three primary topics. The author sought to:

1. Identify which historical dynamics, in terms of politics, policies, and professional leadership, have shaped and subsequently perpetuated three distinct pre-licensure programs for nursing education;
2. Identify the differences in outcomes and/or performance of registered nurses by initial pre-licensure program preparation; and
3. Explain, through the theory of human capital, a basis by which to better understand the known differences of the potential candidates and graduates of the three pre-licensure program types.

In the following literature review, influences on the development of nursing education programs will be considered in regards to the history of nursing education; contextual influences of the development of primary, secondary, and post-secondary education; and higher education enrollment trends in relation to policy. Finally, differences between graduates of the three pre-licensure program types will be explored, and the importance of the human capital theory will be discussed in relation to pre-licensure programs and the variation among candidates for these programs.

2.1 HISTORICAL PERSPECTIVES OF NURSING AND NURSING EDUCATION

2.1.1 Historical Perspectives

During the early development of the United States, there were few hospitals. The first hospital was created in 1751 in Philadelphia (In the Beginning, n.d.); however, in general, most care of the ill or injured was provided in the home by family members, traditionally women. Family members relied on common sense and traditional practices that had proven to be successful, with most actions based on instructions provided by doctors or advice dispensed by older generation females who had provided care in the past. Childbirth and the resulting childcare rendered females to a more binding role in the household, thus the genesis of the gender association with the role of nursing that pervades the profession to this day.

Two major turning points in history occurred that contributed to formalized knowledge about nursing. The Crimean War in Europe (1854-1856) and the Civil War in the United States (1861-1865) resulted in large numbers of ill and injured persons who needed to be nursed back to health or cared for until death. These events required the immediate creation of makeshift or actual hospitals and created the need for a large amount of caregivers (Brumgardt, 1999; Nightingale, 1863; Solomon, p. 7). These events preceded, however, the increased amount of medical knowledge and skill that would, in time, evolve.

Nurses and caregivers who served during the Civil War often felt personally compelled to serve the country after hearing stories of the war. The ranks of nurses drew a socioeconomic mix

of women: those from the lower class who did not wish to be servants, to those from the higher class, such as Hannah Ropes and Florence Nightingale, who may have had altruistic rationale for caring for the sick. Additionally, much nursing care emanated from religious orders whose mission was the care of the sick, such as the Sisters of Mercy. The Sisters of Mercy arrived in Pittsburgh in 1843, and established the first hospital west of the Allegheny Mountains in Pennsylvania, in 1849 (McHale, 1980).

Hannah Ropes was one of the many individuals who felt compelled to aid during the Civil War (Brumgardt, 1999). Ropes arrived at the hospital with the training of only having been a mother, and often referred to her mother role towards the injured soldiers and called them her “boys.” Since no formalized training or certification existed, she began to provide care for the soldiers based on her maternal instincts and general knowledge. This situation was typical of most non-family member caregivers, and although these caregivers possessed no professional training, they were identified as nurses nonetheless:

The Civil War itself initiated new opportunities for women as a group, both in employment and in education. The question of whether an employed woman was stepping out of her domestic sphere became irrelevant in the face of an overwhelming need for labor. Because of the dearth of trained or untrained male personnel, the few women with any medical skills were welcomed as nurses and doctors (Solomon, 1985, p. 45)...like all wars, this heightened the importance of women. (Solomon, p. 7)

Hence, the profession of nursing at the time included many patriotic, empathetic women; however, this wealth of patriotism and empathy did not necessarily translate into medical knowledge and skill. Furthermore, there was a lack of formal training and guidance for nurses in these settings.

To remedy the dearth in nursing as well as medical knowledge and skill, Florence Nightingale, who practiced nursing during the Crimean War, began to collect data and organize her observations in an effort to provide a more formalized training for nurses. Noteworthy is the fact that Florence Nightingale possessed the ability to read and write as well as an insightful mind that allowed her use her abilities to collect qualitative data systematically. Much early nursing work involved mere comfort measures, asepsis, safety (e.g., preventing drowning when bathing children), and judgment (Nightingale, 1863). Nightingale established a training program for nurses based upon her own diaries of what worked and what did not. “Nightingale’s training school, the precursor of today’s diploma schools, was shaped by her experience of leading women variously motivated by gender, religion, and charity, to save the lives of men whose social standing may vary” (Friss, 1994, p. 599). Since nursing work was more practical in nature at that time, it was logical for the training of nurses to occur in the setting in which they would work, as opposed to an off-site institution of formalized education.

2.1.2 Early Schools of Nursing: An Apprenticeship Style of Education

Nursing, as an entity of professional practice dominated by women, was subject to societal influences of the times affecting women and the general workforce. Initially, it was logical for nurses to be educated within the facilities in which they practiced; however, Ashley (1976) noted that in the first decade of the 1900s, the practice of medicine was moving towards a framework of business, as were the hospitals. “Since nursing was the main service provided by these hospitals, it was from the sale of these nursing services that revenue was produced” (Ashley, 1976, p. 6). Hospitals, therefore, created schools of nursing as a continuous source of labor, despite having “no paid instructor and little formal instruction” well into the 1930s (Ashley,

1976, p. 11). In reality, students provided the majority of the nursing care, since few graduate nurses were employed. Hence, students cared for patients unsupervised by either the physicians who inferred that they did as such, or by fully trained, graduate nurses. The free labor provided by the student nurses was essential to the economic gain of the hospitals: “hospitals not only controlled the system of education, they also controlled the employment system” (Ashley, 1976, p. 55). Hospitals became a monopsony to which nursing education and nurses’ subsequent employment was beholden.

This exploitation of both the students and the patients closely resembled the practice of graft, whereby the hospitals’ acquisition of profit resulted from unsuspecting patients paying for care by trained nurses. Having students provide the care, as opposed to fully trained nurses, violated a position of trust held by the hospitals, as the institutions collected fees for services not provided as stated. Additionally, the practice of staffing a hospital with students left the graduate nurses to find employment elsewhere. Hence, the hospitals’ schools of nursing produced an unnecessary product, the graduate nurse: Hospitals admitted numbers of students into the schools of nursing which to meet the needs of that specific institution, thereby not needing the services of the graduate nurses which they had produced. Hospitals, run by males, controlled the schools and the employment opportunities. “The public was largely unaware of this system” (Ashley, 1976, p. 16).

2.1.3 Summary

As nursing was one of the few professions initially open to women, many women entered the field to attain some financial independence, especially those foregoing the option of traditional societal roles of wife and mother. The socio-economic composition of nursing often troubled its

professional image. However, the lack of formalized training and education remained a central concern: “While class differences troubled nursing leaders, they knew that the main obstacle toward professional development for any nurse was a lack of proper credentials” (Friss, 1994, p. 599).

The period of late 1800s and early 1900s gave rise to the Industrial Revolution in the United States during which a great expansion of immigrant population arrived to fill the necessary labor positions. The Commonwealth of Pennsylvania will be utilized as a point of reference, having had a large immigrant population relative to its industrial history. With this expansion of population came the proliferation of hospitals to manage the illnesses and diseases resulting from high-density living conditions in the cities as well as for the treatment of the occupation-related injuries incurred in the workplace. Developments in healthcare and nursing coincided with many socio-political issues such as those of primary and secondary education, post-secondary education, medical education, nursing education, the proprietary endeavors of hospitals, and perhaps most important to the development of the nursing profession, the societal role of women. Each of these factors contributed differently and sometimes malevolently to the development of nursing as a profession. These following sections address these issues individually.

2.2 CONTEXTUAL INFLUENCES ON THE EVOLUTION OF PRIMARY, SECONDARY, AND POST-SECONDARY EDUCATION ON THE EVOLUTION OF PROGRAMS FOR NURSING EDUCATION

2.2.1 Primary and Secondary Education

The historical development of primary and secondary education lays a foundation by which one may understand the evolution of obstacles subsequently encountered by efforts to formalize and professionalize nursing education. Since the 10th Amendment of the U.S. Constitution relegated that which is not controlled by the federal government to the individual states, educational policies for education, including those for nursing, lie within the states' jurisdiction. Although state legislation mandating the establishment of public schools was passed in 1874, it was not until 1895 that compulsory schooling was enacted in Pennsylvania. Compulsory schooling at the time was limited to children between the ages of eight to thirteen for a total of 16 weeks a year. Public high schools, supported by tax revenue, began in Philadelphia in 1836 and in Pittsburgh in 1849, but not all regions of the state had the population or the revenue to support secondary education (Pennsylvania Historical and Museum Commission, n.d).

Between 1910 and 1940, the United States experienced a tremendous educational transformation. “Just 9 percent of 18-year olds had high school diplomas in 1910, but more than 50 percent did by 1940. The high school movement set the United States far ahead of all other nations in its *human capital stock* [emphasis added]” (Goldin & Katz, 2008, p. 2). In the Northeast and Midwest, the high school movement rapidly progressed, while the South advanced

at a much slower rate. However, Pennsylvania and other Mid-Atlantic states made up the “non-southern region with the lowest graduation rates before 1940. Its three states had a more industrial economy than the other regions” (Goldin & Katz, 2008, p. 8).

As the Great Depression enveloped the country, joblessness increased high school attendance. Conversely, World War II reduced high school attendance due to war service for males and the call to the workforce for females. It was not until after World War II that consistent high school attendance became a normalcy (Goldin & Katz, 2008). It is important to note the fluctuation in high school attendance and graduation, as this variability affected the number of youth available for the post-secondary and higher education pipeline. The admissions standards for pre-licensure programs of nursing education would be impacted by the fact that high school attendance and graduation rates were not consistent.

2.2.2 Post-Secondary Education: College Attendance

Prior to mandatory secondary education, the availability of persons having sufficient academic preparedness necessary for college level work was limited. These limitations constrained initiatives to move nursing education into a college environment. Prior to World War II, higher education was a reality reserved for males from affluent backgrounds. Males from non-affluent families, who were often immigrants, were essential in labor positions not only from the employers’ perspective, but also from the workers’ economic necessity of having to work for remuneration. Immigrant workers often did not speak, read, or write English, and they frequently had not engaged in formal education in their countries of origin. Much industrial work could be completed with very little on-the-job training; hence, both laborers and industrialists did not view education as a pre-requisite for the workforce. As such, high school

completion rates were low in the industrial regions (Goldin & Katz, 2008). Such on-the-job training provided the model of apprenticeship training for nurses during parallel time periods (Ashley, 1976; Thelin, 2004).

Though college attendance between 1860 and 1890 was constrained by the economic environment and “college attendance, let alone a bachelor’s degree, was hardly a prerequisite for most professional pursuits,” well over 90% of college students between 1880 and 1900 opted to end their studies after two years “staying just long enough to complete their L.I. (license of instruction) certificate” (Thelin, 2004, p. 99). This *qualification destination* “would allow them to gain immediate employment as public school teachers, even without the bachelors of arts degree” (Müller et al., 1989, p. 97); therefore, many youth saw no need to persist for further education.

Currently, the qualification destination scenario exists in the nursing profession, as a two-year nursing education program can be followed by immediate employment. Potential nurses may select a foreshortened hospital-based diploma program or an associate’s degree program of education. Despite not having the Bachelor of Science degree, students graduating from these non-four-year programs are permitted to sit for the identical licensing exam, thus gaining immediate employment with less time spent in the educational process as was done by teachers in the late 1800s.

2.2.3 Women and College Attendance

The attitudes and resulting practices regarding the education of females was a construct based upon societal views of women. It is important to note, as a point of reference, that women in the United States did attain the right to vote until the passage of the 19th Amendment in 1902.

Initially, society's purpose for women attaining post-secondary education of a college nature was so that educated males could marry intellectual equals and that the children thereof, under the care of such women, would have their educational activities properly directed:

Republican wives and mothers gained a special role in the creation of an informed citizenry. Though not citizens themselves, they would train their young male offspring for citizenship...the education of women was critical to the well-being of the new nation [based upon] mothers responsibilities for the early instruction of children. (Solomon, 1985, p. 12)

If affluent women were educated to serve as equivalent mates for affluent males, then non-affluent females fared less well in regards to access to post-secondary education.

As time progressed, the number of colleges accepting and educating young women increased:

There is no record of a woman of the Colonial Period having received a degree, there were at least 14 institutions providing some level of higher education for women identified between the years of 1800 and 1860. The number of colleges including women increased to 45 by 1860. (Thelin, 2004, p. 83)

At the time of the Civil War, when the conditions of war created an inroad of importance for the abilities of women, there were few colleges and no formal schools of nursing.

Though not dominated by females to the same degree as nursing, the field of teaching was a career option for women, and the evolution of nursing education was comparable to the evolution of teacher education. Teacher colleges, or 'normal schools' as they were known, did not provide a full bachelor's degree program, instead only offering a certificate or license of instruction (Thelin, 2004). Similar to nursing education, teacher colleges did not initially have

standardized curriculum. Of critical importance, however, is that these teacher education programs were located apart from the milieu of practice (i.e., primary or secondary schools). Because these teacher education programs existed in a higher education setting and were independent of an employer, teachers colleges more easily evolved into baccalaureate programs. Conversely, nursing programs occurred in hospitals that were inherently linked to an employer, thus contributing to the challenges in standardization of curriculum and formal nursing education.

2.2.4 Nursing Education in the Context of Higher Education

In 1909, the University of Minnesota implemented the first nursing program located on a university campus. This initial program was three years in length; however, the university did not implement a nursing program culminating with a bachelor's degree until 1919. The baccalaureate program was five years in length, and the three-year, non-degree program continued to simultaneously operate until 1947 (University of Minnesota School of Nursing, 2013). Despite the creation of a program of higher education for nurses, the momentum to move nursing education into an institution of higher education was met with resistance and was challenged by societal factors.

In a 1912 conference, a group of hospital administrators known as the Committee on the Training of Nurses posited that a mandatory requirement of one year of high school prior to nursing school would create a “dearth of pupils” for the schools and place a “hardship on pupils” themselves (Ashley, 1976, p. 114). This statement was not unreasonable, as schooling was compulsory only until the age of 13 in Pennsylvania after 1895 (Pennsylvania Historical and Museum Commission, n.d.), and there were limited numbers of persons educated beyond

grammar school. The increase in the numbers of hospitals and their increasingly refined organizational structure gave rise to inputs in nursing education without regard to professionalization.

In 1923, the Rockefeller Foundation funded the Committee of the Study of Nursing Education, resulting in the Goldmark Report on Nursing and Nursing Education (U.S. Committee for the Study of Nursing Education, 1923). This report “recommended that nursing education be standardized, that two levels of nurses be registered, and that education be provided by schools or colleges rather than hospitals” (Friss, 1994, p. 600). However, the recommendations to move nursing education programs into colleges were constrained by the limitations of post-secondary schooling at the time. In 1910, less than 10% of persons 18 years old had graduated high school, thus severely restricting the number of persons in the education pipeline prepared to do college-level work (NCES, 1993), . Moving the education for nurses out of the hospitals into separate institutions was both progressive and visionary and required a change in the educational format from an apprenticeship-type model to formal schooling.

Despite the emergence of the first baccalaureate program for nurses in 1919, the nursing baccalaureate movement was slow to progress. While other knowledge-specific groups moved into a more professional status through formalized education in colleges and universities, nursing persisted in an educational process located outside of institutions of higher education. This practice resulted in nurses’ education laying “somewhere in a limbo between laborers, white collar workers, and the “true” professionals’ (Etzioni, 1969, p. vi). Etzioni (1969) stated “knowledge is largely an individual property” (p. x), which is a basic tenant of human capital. “For this reason, professional groups have sought to establish a place for themselves in colleges and universities; the nursing profession is no exception to this rule” (Ashley, 1976, p. 69).

2.2.5 Schools of Medicine as a Benchmark for a Standardized Program for Pre-Licensure Education

While the field of nursing was attempting to professionalize itself by creating entry-level programs for pre-licensure nursing education in institutions of higher education, the medical profession was making its own moves to standardize and professionalize its education:

Unfortunately, in the United States with its 161 medical schools there is no national control of medical education. Medical legislation is in the hands of fifty state governments and each state makes its own medical laws and executes them as it sees fit, with the result that there are fifty different standards of control. . . . What we need is a practical and high uniform standard for all schools. (Bevan, 2008, p. 569)

Similar to schools of nursing, medical schools had been private, for-profit institutions and operated without clear curriculums (Thelin, 2004).

The 1910 Flexner Report provided the impetus that moved medical education into graduate college education with standardized admission requirements such as “chemistry, physics and biology” as was suggested by Bevan (1908, p. 568). As a result of the Flexner Report, physician education became that of a terminal, graduate degree: a doctorate. As was the case with most other higher education programs at the time, medicine was dominated by males. Since higher education was a privilege afforded at that time to the wealthy males who had the resources not only to pay for education but to exist through the situation of foregone wages encountered by attending school, it would follow that males would support, or at the very least, not oppose, such requirements for medical education.

2.2.6 Influences of the Community College Movement on Nursing Education

Another strong influencing factor on the education of nurses was expansion of community colleges and the creation of programs for nursing education therein. Community colleges emerged as a result of federal, state, and local government policies. The idea of a shortened academic nursing program in a community college setting originated from Mildred Montag. “The post-World War II shortage of nurses was severe, so Mildred Montag set out to explore an alternative to hospital-based apprentice programs and four-year university plans” (Hanink, n.d., p. 1). First implemented at Adelphi University in 1942, Montag’s program model for nursing education in community colleges emerged from her 1951 doctoral dissertation *The Education of Nursing Technicians*:

It suggested that one solution to the nursing shortage might be to *educate technical nurses in community colleges* [emphasis added]. This would shorten the time needed to become a nurse; it would also make nursing education more available to men, older students, minorities and married persons. She envisioned these nurses as assistants to the professional nurses who, as Montag thought, would have a baccalaureate degree. (Hanink, n.d., p. 2)

In an in-depth review of community colleges, Dougherty (2001) lamented the 1960’s transformation of the colleges’ original purpose from teaching entry-level arts and sciences to “vocationalization.” It was in the 1960s that nursing education programs began appearing in community colleges; however, Montag’s vision for community college programs was the creation of nurse technicians (Hanink, n.d.). Dougherty (2001) identified the steady depletion and attrition of unskilled jobs occurring in conjunction with the appearance of “middle-level

semi-professional or occupations” (p. 30) that could benefit from educational programs provided by community colleges.

Dougherty (2001) further examined the multitude of influences on the movement of vocational programs into community colleges. At the federal level, the Vocational Education Act (VEA) of 1963 served as a large financial influence for community college education. The VEA was the result of a needs assessment from the “Advisory Group on Higher Education [which was] to study the nation’s needs in the area of post-secondary vocational education. In 1961, this group recommended that the federal government start funding programs to train semiprofessional technicians” (Dougherty, 2001, p. 231). One-third of the funds assured by the VEA were designated to vocational education at the post-secondary level.

Further compounding the effects of the VEA, state-level governments began advocating for the creation and funding of community colleges, pushing for the move of vocational education from high schools into these environments:

Through state master plans and other publications, they made it very clear that they regarded occupational education as absolutely central to the community college’s mission and that local officials should bend every effort to systematically vocationalize their institutions...This imperative was sweetened by money incentives in the form of operating and capital aid specifically earmarked for vocational education. [Additionally,] community colleges were allocated more funds for operating their vocational facilities than their academic programs” (Dougherty, 2011, p. 220).

In Pennsylvania, the Community College Act was passed in 1963.

Because of the practical aspect to nursing education and the cyclical shortages of nurses, the placement of nursing education into the community college setting met both the definition for

“occupational training’ and the economic goal of supplying a local industry with trained workers. It would follow then, that nursing programs within the context of a community college are preparing a *nurse technician*, someone whose skill set and knowledge base would lie between an untrained person and a fully trained professional nurse (Hanink, n.d.). States’ policies, however, permitted community college programs to prepare registered nurses as opposed to the intended licensed practical nurses. Thus, community college programs further complicated efforts to move nursing education into a baccalaureate setting, providing yet a third avenue by which pre-licensure nursing education could occur. “The failure to link community colleges with practical and diploma nursing and universities with registered nursing still haunts the nursing profession today” (Friss, 1994, p. 604).

In the context of post-secondary education, Dougherty (1994) stated that “the community college also presents contradictory faces to students, for it closes as well as opens educational opportunity” (p. 67). In the case of nursing education, since the associate’s degree provides the opportunity to sit for and obtain the exact same licensure as the baccalaureate degree, the availability of a foreshortened program might decrease students’ motivation to choose a baccalaureate program initially. Student’s selection of the post-education trajectory is based upon numerous rationales, which are elaborated upon in the human capital section of this work. Additionally, the motivation to pursue a Bachelor of Science in Nursing beyond that of an AD or diploma may be thwarted when the academic credentialing does not differentiate any level of practice or monetary compensation.

Shortly after the creation and swift proliferation of community colleges in the 1960s, the ANA issued a position paper regarding pre-licensure education in 1965. The community college’s mission of providing occupational education (Dougherty, 2001) posed direct conflict to

the ANA statement calling for “baccalaureate education for beginning nursing practice [and] associate degree education for beginning *technical* [emphasis added] practice” (ANA, 1965, p.107). By the time that the ANA issued its position paper in 1965, the proliferation of associate degree pre-licensure programs for nursing education had already started.

2.2.7 Federal Influences on Nursing Education

In the disquisition of influences on nursing education, it is important to be cognizant of government policies that directly or indirectly impacted policies about nursing education. While Friss (1994) provided a comprehensive summary of the direct and indirect roles of government influences on nursing education, this section will serve to highlight a few more recent and specific government initiatives which affected pre-licensure nursing education. Government influences in nursing education arose from the federal, state, and, in the case of community colleges, at the local level. These influences range from practice issues and licensure to funding and problem solving.

One influential federal initiative which influenced nursing education was The Nurses Training Act of 1943, also known as the Bolton Act. This Act created the Cadet Nurse Corp and served as an emergency intervention to provide a necessary “reservoir for the military” as well as to “prevent the collapse of civilian nursing” (Hanink, n.d.). After 1945, the Cadet Nurse Corp was unnecessary; yet, the abbreviated nursing program continued under the justification that “the post-World War II shortage of nurses was severe” (Hanink, n.d., p. 1). Hence, the Bolton Act provided funding for Montag’s foreshortened program for nursing education. After completing Montag’s program, most students joined the U.S. Cadet Nurse Corps (Kondratus, 1995); however, the Cadet Nurse Corps existed only for the remaining three-year period of the

war. As noted earlier, Solomon (1985) stated “like all wars, this heightened the importance of women” (p. 7), and as nursing was predominantly a female profession, the importance of the profession was heightened as well. However, government interventions and society once again made strong hegemonious influences on the education of nurses by funding a foreshortened non-four-year program of education.

After World War II, the National Council of Nursing created further confusion with regard to nursing education in 1948. While recommending that hospital diploma based schools of nursing close, it *advocated* the education of nurses in a shorter two-year program at the associate degree level, declaring baccalaureate programs as more appropriate training for nursing leadership rather than entry into practice (Friss, 1994). The Council’s recommendations were problematic in that they chose to decrease the duration of preparation programs for nurses, rather than increase it, especially considering the prolific expansion of medical and nursing knowledge during this time. The notion that baccalaureate programs were only necessary for leaders, as opposed to entry into practice, was also problematic to advancing the field.

In direct opposition to the Council’s recommendation, the Lucille Esther Brown Report, also released in 1948, declared “apprentice training was no longer sufficient and that education rightfully belonged in colleges” (Friss, 1994, p. 604). This scholarly work, produced by a social anthropologist as opposed to a nurse, was “the nursing equivalent of the 1910 Flexner Report in medicine” (Friss, 1994, p. 604). The Brown Report recommendations ran contrary to the National Council of Nursing. Despite Brown’s (1948) call for action, the closure of diploma schools was never actualized due to biases against baccalaureate programs from the American Hospital Association, which “vigorously opposed scholarship support for baccalaureate programs, any restrictions on federal support for accredited programs, and monies for the

construction and development of new schools other than diploma programs” (Friss, 1994, p. 604). Thus, the American Hospital Association proved to be a powerful force that influenced federal policy about funding for the education of nurses.

2.2.7.1 Medicare

The Medicare program resulted from Title XVIII of the 1965 Social Security Act, devised specifically as a health initiative for the increasing population of elderly. In addition to Medicare serving as a health initiative, significant funding for health care education was also embedded in the program: “policymakers designed Medicare as the largest federal source of funding for educating medical, nursing, and other non-physician health professionals...through a program known as Graduate Medical Education (GME)” (Thies & Harper, 2004, p. 298). As a result, Medicare provides health care facilities such as hospitals with funding to cover costs associated with “educational activities over and above the usual patient care services” (Thies & Harper, 2004, p. 298). While HBDPL programs qualify for such educational funds, baccalaureate and associate degree programs are denied access to this large source of funding because they are housed in institutions of education and do not provide patient care within the context of an institution. Yet again, external policy supported the monopsony status of hospitals and their role in pre-licensure nursing education.

The Prospective Payment System, a result of the 1983 amendment to the Social Security Act, provided further conflicts for nursing education programs. Relative to the funding for associated costs for education, “the direct and indirect costs of educational activities would be determined separately, and “passed through”...that is they passed directly to providers without being subject to fixed reimbursement schedules for clinical services” (Thies and Harper, 2004, p. 299). This practice permits a situation where the use of the funding to diploma schools of

nursing does not have to be directly or clearly specified. Thus, federal policy has promoted the continued existence of hospital-based diploma programs while failing to set any accountability standards for curriculum, admissions criteria, or outcome criteria (e.g., NCLEX-RN pass rates) as recommended by researchers and the nursing profession, from within as well as from outside of the nursing profession.

2.2.7.2 The Nurse Reinvestment Act

Another federal law with the potential to influence the academic preparedness of potential candidates for pre-licensure nursing education programs is the Nurse Reinvestment Act of 2002. As an amendment to the Public Health Service Act (1944), the purpose of the Nurse Reinvestment Act was to “address the increasing shortage of registered nurses by instituting a series of policies to improve nurse recruitment and nurse retention” (Nurse Reinvestment Act, 2002). Thus, public service announcements ran from 2003-2007 to “encourage individuals from disadvantaged backgrounds to enter the nursing profession” (Nurse Reinvestment Act, 2002, p.3). However, as noted by DesJardins et al. (1999) and Perna and Titus (2004), persons from disadvantaged backgrounds may not have the levels of academic preparedness such that is necessary for success in an academically rigorous program. Initiatives that promote candidates who are not academically prepared could potentiate such outcomes as low institutional first-time NCLEX-RN pass rates.

2.2.8 State-level Influences on Nursing Education

State-level regulations and administrative laws have imposed additional influences on pre-licensure education. A movement toward requiring licensure of nurses began in the late 1940s,

with each state eventually creating their own board of nursing. As per the Tenth Amendment of the U.S. Constitution, such jurisdiction is relegated to the states. In addition to the licensing of individual nurses, these boards are charged with defining the scope of practice, enacting disciplinary measures. The state boards of nursing are also responsible for approving the programs of education in schools of nursing. These boards handle administrative law, which is similar, but different to the specific state laws. For example, in Pennsylvania, Chapter 21 of the Pennsylvania Code is specific to nursing, while the Nurse Practice Act is developed and enacted as an administrative law by the Pennsylvania State Board of Nursing (State Board of Nursing, 2010).

In order to receive state approval to operate, schools of nursing must maintain certain percentages of students who successfully pass the NCLEX-RX the first time. In 2008, a first-time institutional pass rate of 60% was acceptable; however, in January of 2008, the Pennsylvania State Board of Nursing proposed a change to increase this pass rate of first time. The impetus for this decision was largely based on the fact that other states required minimum first-time pass rates of 75-85%: “The Commonwealth’s minimum pass rate is the *least stringent in the Nation* [emphasis added] when compared with the 32 other states that use the NCLEX pass rate as a criterion for approving a nursing education program” (NCLEX-RN Performance, 2008). With Pennsylvania’s schools of nursing permitted to produce much lower pass rates, the 2008 proposal aimed to hold Pennsylvania’s schools of nursing to standards pervasive in the majority of other states. As of 2010, Commonwealth of Pennsylvania required institutional pass rates for an approved school of nursing to be at or above 80% (PA Code § 21.33b).

It is important to reflect on the previous practice of accepting the 60% institutional pass rate, which from an alternate perspective, is the acceptance of a 40% failure rate. In a program

expected to successfully graduate students with the skills and knowledge necessary for entry-level practice, a 40% failure rate on the licensing examination raises questions about the quality of the program's education as well as the admissions criteria and selectivity of those criteria. The proposed movement to an 80% pass rate (alternately viewed as the acceptance of a 20% failure rate) may theoretically have created challenges for pre-licensure programs of nursing education to re-evaluate admissions standards for academic preparedness due to the academic rigor required to meet the new guidelines for institutional pass rates.

For example, in Pennsylvania for the NCLEX-RX testing year from 2006-2007, four schools of nursing have first-time pass rates of less than 60% (NCLEX-RN Performance, 2007). Out of the then existing 83 pre-licensure nursing programs at that time, an additional 26 programs fell below the 2008 proposed 80% pass rate (but above 60%) (NCLEX-RN Performance, 2008). Hence, 30 total pre-licensure programs (i.e., 37% of the total programs available, or almost two out of every five schools) would have been placed on a probationary status under the 2008 proposed guidelines. Thus, the pass rate changes would have required these pre-licensure programs of nursing education to evaluate institutional academic rigor and the selectivity of the admissions criteria. Recruitment strategies are important institutional processes to ensure student success on the NCLEX-RN, while simultaneously thwarting retention problems related to any increases in academic rigor that might be necessary in light of state-required institutional pass rates (DesJardins et al., 1998).

2.3 ENROLLMENT INCREASE TRENDS IN HIGHER EDUCATION: SOCIETAL RESPONSES RESULTING FROM GOVERNMENT POLICY FOR EDUCATION

By the time of the 1965 ANA position paper, changes were occurring in American society that would affect pre-licensure nursing education directly and indirectly. Beginning in the 1960s there was a significant shift in high education attendance rates:

The demand for higher education was about to grow tremendously as baby boomers reached college age and the underlying college participation rate increased. Enrollments in public higher education doubled between 1955 and 1965, then doubled again from 1965 to 1975. (Hauptman, 2001, p. 66)

In addition to the overall increases in college enrollment, the gender dynamic of college enrollment was changing, as significantly more women were enrolling in higher education. In 1947, over 1.6 million males were enrolled in higher education institutions, and by 1957, male enrollment had reached over two million (U.S. Department of Education, 2001). Female enrollment did not exceed one million until 1956, and it did not match the 1.6 million figure until 1961, 14 years after this number was achieved by males (U.S. Department of Education, 2001). However, by 1964, in less than a decade, the female enrollment topped two million also, and by 1975, female enrollment was at 90% of male enrollment, five million and six million respectively (U.S. Department of Education, 2001). In 1975, male enrollment peaked at 6.1 million, but by 1979, male enrollment trailed the enrollment of females by approximately three percent, at 5.68 and 5.89 million respectively. As this narrative illustrates, women were progressively entering colleges and universities in numbers not previously seen.

This trend in female enrollment in higher education in the 1960s coincided with a societal shift in which women were seeking to change their roles and images, initiatives that were made

possible in part by new federal policies. While the Civil Rights Act of 1964 spoke specifically against discrimination against race in hiring practices, the mindset permeated higher education in the form of changing admission practices, including those for women. Then, in 1972, Title IX of the Higher Education Act of 1965, directly addressed gender discrimination in any education program or athletic program that received federal funds. As a result, professions that were previously predominantly male (e.g., engineering, medicine or law) began to increasingly accept females; therefore, females began seeking admissions into these professions to which they previously had limited or no access.

With the attraction of new fields open to women, many predominantly female fields, such as nursing, began to see decreasing numbers of women interested in them; however, this decrease was not offset by an increase in males interested in nursing (as of 2004, males comprised only 5.8% of the national registered nurse population as reported by the U.S. Department of Health and Human Services (2010)). More women were enrolling in degree-granting institutions (i.e., colleges and universities, not occupational/vocational programs that granted a diploma). However, the significance is that with more women enrolling in higher education, the number of available baccalaureate nursing programs was still in the minority as compared to the availability of diploma and associate degree programs (U.S Department of Health and Human Services, 2006). With more women entering into higher education settings, the lack of available baccalaureate nursing programs, and the abdication of traditional female professions, fewer and fewer women were entering into the nursing profession.

Furthermore, the availability of federal financial aid promoted the increases of female participation in higher education. While the initial impetus for federal financial aid was the Servicemen's Readjustment Act of 1944, this initiative did not overwhelmingly affect females,

as military service was still predominantly male. However, other federal financial initiatives which followed perhaps began to pave the way for females to have the opportunity to afford higher education. In 1958, the National Defense Education Act, otherwise known as the Perkins Student Loan Program, began to use “new federal capital and repayments into a revolving fund to provide low-interest loans to students with financial need” (Hauptman, 2001, p. 72). Additionally, work-study was introduced in 1965 as part of the Higher Education Act; aid for students demonstrating financial need was addressed with the Basic Education Opportunity Grant program (now known as Pell Grants) in 1972; and further financial support for post-secondary students resulted from The Middle Income Student Assistance Act (1978).

The federal policies establishing and allocating financial aid helped to fuel increased enrollments in higher education. At the same time, societal change allowed women to move into degree-granting institutions and professional roles that were previously closed to them. Government policy provided the catalyst for change. While these changes in policy proved to be greatly beneficial to female enrollment in HEIs, they may well have contributed to a stagnation in growth for nursing education. Title IX is significant to the exodus of females from the traditional “female professions” and may have created a ‘brain drain,’ with the most academically prepared and brightest women possibly venturing into highly competitive programs to pursue professions such as medicine and engineering (Solomon, 1985, pp. 186-206).

2.4 PROFESSIONAL ACCREDITING BODIES' AND PROFESSIONAL ORGANIZATIONS' LEADERSHIP INFLUENCES ON PRE-LICENSURE EDUCATION

2.4.1 Influences on Professional Accrediting Bodies

In addition to being licensed and approved by the state boards of nursing, schools of nursing must also be accredited by a professional organization. The accreditation process for schools of nursing establishes a benchmark standard for evaluation, providing potential applicants an assurance that legitimizes the program of study. The National League for Nursing (NLN) is one such accrediting agency. The NLN evolved from The American Society of Superintendents of Training Schools for Nurses and “was founded [in 1893] for the purpose of establishing and maintaining a universal standard of training for nurses” (National League for Nursing Accrediting Commission [NLNAC], 2013a, p. 4). This organization became the National League for Nursing Education (NLNE), later evolving into the NLN in 1952. Guidance about curriculum was continued by the NLN until formal accreditation process began in 1938.

The NLN's National League for Nursing Accrediting Commission (NLNAC), is an independent business unit recognized by the U.S. Department of Education that accredits all levels of pre-licensure nursing education (National League for Nursing, 2011a). In 1917, the NLN published curriculum standards for schools of nursing, but these specific guidelines were abolished in 1937. The following year, in 1938, the NLN began the process of accreditation for schools of nursing (NLNAC, 2013a).

Another professional organization providing accreditation for schools of nursing is the American Association of Colleges of Nursing (AACN) whose accrediting branch is the Commission on Collegiate Nursing Education (CCNE). As stated on the home page, “the

Commission on Collegiate Nursing Education (CCNE) is an autonomous accrediting agency contributing to the improvement of the public's health. CCNE ensures the quality and integrity of baccalaureate and graduate education programs preparing effective nurses” (Commission on Collegiate Nursing Education, 2009).

The AACN’s mission and purpose is different from that of the NLN in that it speaks only to baccalaureate entry programs and graduate nursing education programs. For example, the NLN (2008) Goal Number 6 states that the “evaluation of student learning demonstrates that graduates have achieved identified competencies consistent with the institutional mission...and that the outcomes of the nursing education unit have been achieved” (p. 8). In comparison, the AACN CCNE standards for outcomes present as more clear and measurable. Standard III-A states that “the curriculum is developed, implemented, and revised to reflect clear statements of expected learning outcomes that are consistent with the program’s mission, goals, and expected outcomes” (National League for Nursing, 2008, p. 84) while Standard IV-B states that

surveys and other data are used to collect information about student, alumni, and employer satisfaction and demonstrated achievements of graduates. Student outcome data include, but are not limited to: graduation rates, *NCLEX-RN pass rates* [emphasis added], certification examination pass rates, and job placement rates as appropriate.

As of 2013, the NLN criteria for all three pre-licensure program types (NLNAC 2013b, 2013c, 2013d) stated that institutional performance on the NCLEX-RN must be “at or above the national mean for the same three year period” (NLNAC, 2013a. p. § 6.4.1) for the years which are under review by the accreditation process. Additionally, the NLN updated standards addressed successful program completion by students as a criterion for accreditation. However,

neither the AACN nor the NLN accreditation standards specifically address consideration of the academic preparedness of students admitted to a program.

An accrediting body with more diffusely defined outcome criteria could theoretically lead to less academically rigorous programs and subsequently, lesser admissions requirements for academic preparedness. While not specifically addressing admissions criteria, the NLN 2013 updates did address the student outcomes of program completion and institutional first-time NCLEX-pass rates. For example, the national mean for the years of 2008, 2009, 2010 were 86.7%, 88.42%, and 87.41%, respectively (NCLEX Pass Rates, 2008, 2009, 2010). Such outcomes measures may indirectly serve to address not only programmatic rigor, but also admissions criteria such that program completion and successful passing of the licensing examination may come to fruition.

Accrediting bodies may exert significant influences over professional education. For example, the Commission on Accreditation in Physical Therapy Education (CAPTE) accredits pre-licensure programs only at the masters and doctoral levels, while accreditation for assistant level programs is reserved for associate degree programs (CAPTE, 2013). The profession of physical therapy answers to one accrediting body, whereas the nursing profession may select one of two. A solitary accrediting body may exert influences in establishing what level of education is a benchmark requirement by the accreditation standards that are set forth.

2.4.2 Influences of Professional Organizations' Leadership

Professional organizations provide a cohesive unity for establishing standards within a discipline. Between 1880 and 1929, some nursing leaders desired to reduce all of the variables within the profession to present a unified, professional approach to the nursing profession (Friss, 1994).

Prior to the time of formal regulation and licensure, professional organizations such as the American Nurses Association (ANA) and the National League for Nurses (NLN) served only in a leadership capacity in the profession of nursing. Once state administrative regulatory boards and laws were established, professional organizations provided cohesiveness within nursing which transcended state boundaries.

In 1966, Lambertsen, the then president of the American Nurses' Foundation and a former member of ANA's Committee on Education, clearly articulated the need for proactive nursing leadership in public policy changes with regard to nursing education. She stated that "the delivery of nursing services is a complex social problem—a problem which the public is attempting to solve by social pressure and social legislation" (Lambertsten, 1966, p. 1784). Lambertsen definitively noted that federal and state "Action Program" initiatives with regard to increasing "a pool of one million health workers within the next ten years" affected nurses and nursing education for the present and future. The fact that societal pressures and legislation dictated efforts to the field of nursing's problems troubled Lambertsten, and she instead advocated for the profession solving its own problems. Additionally, Lambertsen (1966) addressed the increases in technology, speaking of the anticipation for the development of even more technology. Along with these technological advancements, Lambersten (1966) forecasted a significant change in the patient population. Considering these changes, Lambersten (1966) proclaimed:

There will be a greater need for *liberally educated nurses* with the capacity for professional judgment and professional action *as yet undefined in the nursing literature or in nursing research* [emphasis added]—nurses who will have gone far beyond the standard training which is being given in the 1960s." (p. 1785)

Professional associations provide guidance and direction to a group of practitioners within a given field. The ANA as it was initially formed was no different: “Ever since its founding in 1896, the association has made clear its responsibility for determining the scope of nursing practice and assuring the public that those who practice nursing are competent” (ANA, 1965, p. 106). In fact, the promotion of sound licensing legislation was among the ANA’s list of primary activities (ANA, 1965). However, given the fact that the ANA determined the scope of nursing practice in addition to their legislative responsibilities in regards to licensing, the direction from this professional organization regarding the promotion of baccalaureate entry-level education for licensing in all states ceased to progress. Currently, the ANA does not have a statement about pre-licensure education identifying itself as follows:

The ANA advances the nursing profession by fostering high standards of nursing practice, promoting the rights of nurses in the workplace, projecting a positive and realistic view of nursing, and by lobbying the Congress and regulatory agencies on health care issues affecting nurses and the public. (ANA, 2013, para 3)

The current ANA, then, is a powerful force representing the nursing profession for a variety of issues. It states that it represents the “interests of the nation’s 3.1 million registered nurses” (ANA, 2013, para 2); however, despite its powerful statements regarding nursing education in 1965, it does not mention nursing education in terms of curriculum, first-time institutional NCLEX-RN pass rates, or benchmark admissions criteria. Please see Appendix F for the entire ANA Statement of Purpose.

The National League for Nursing (NLN) currently describes itself as “dedicated to excellence in nursing education, the National League for Nursing is the preferred membership organization for nurse faculty and leaders in nursing education” (NLN, 2011a, About Us). As

can be seen, there is no mention of the necessary levels of academic preparedness for in-coming students. In a position paper entitled *Innovation in Nursing Education: A Call to Reform*, it is stated that “new pedagogies are required that are research-based, responsive to a rapidly-changing health care system, and reflective of new partnerships between and among students, teachers and clinicians. Our students and recipients of nursing care deserve no less” (NLN, 2003, para 3). These recommendations are vague and do not provide clearly delineated direction. For example, the excerpt which states to “explore new pedagogies and new ways of thinking about nursing education” (NLN, 2003) does not suggest a uniform curriculum or an entry level of education.

Citing Warren and Connors, the NLN (2008) stated that “it is important that nurses acquire the necessary “21st century knowledge and skills for practice in a complex, emerging technologically sophisticated, consumer-centric, global environment” (para 2). In an educational environment such as a community college, which by design deals with vocational training and workforce development, or a non-degree-granting diploma-based hospital program, the NLN failed to articulate how the aforementioned goals can be reached, given the decreased levels of academic preparedness by candidates who select less than four-year programs. It seems that goals such as these could be reached more realistically in a college or university setting, with resources geared toward sophisticated technology and global learning. Information literacy was an important construct, as noted at the 2009 annual meeting of the Southern Association of Colleges and Universities Commission on Colleges (Schneider, 2009). The current NLN statements and goals are most congruent with the “the benefits of a baccalaureate level of education over other forms of post-secondary education is that a college education has

established tenets, such as teaching that which “an *educated person* should know [emphasis added]” and emphasizing “study in a discipline’ (Schneider, 2009, p.3).

Recently, the Pennsylvania Coalition for the Advancement of Nursing Education (PCANE) (2011) issued a White Paper regarding the plight of the fragmentation that exists within nursing education. The Coalition proposed various pathways and solutions to advance the education of nurses so that at least 80% have a bachelor’s degree by 2020. The following PCANE recommendation requires further consideration: “Expand capacity of RN-BSN programs in institutions of higher education across the State, both public and private” (p. 46). This advice does not address the underlying issues of levels of academic preparedness necessary for success in four-year institutions – preparedness which may be limited for nurses who initially selected non-baccalaureate programs.

Professional organizations have exerted powerful influences over professional education. The American Association of Colleges of Pharmacy (AACP) advanced the premise for increased pre-licensure education of pharmacists and had the initiative implemented by the 1994-1995 academic year (Commission to Implement Change in Pharmaceutical Education, 1989). Efforts to standardize the nursing curriculum by the NLN or the ANA were met with resistance and failed to materialize into the 21st Century.

2.4.3 Summary

Nursing has been influenced by numerous external controls and laws not originated from within the profession. To provide chronological context, a timeline the history discussed in this chapter can be found in Appendix G. The continuation of an apprenticeship model of nursing education that has persisted into the 21st Century has perpetuated attempts at attaining a professional status

akin to “floating a status claim without sufficient base and a rejection by those who hold the status legitimately” (Etzioni, 1969, p.vii). Stated differently, groups not having proper educational credentials cannot legitimize a claim for profession status when compared to professions educated with bachelor’s degrees or higher. Referring to nursing as a semi-profession, Etzioni (1969) stated that “[nurses’] training is shorter, their status is less legitimated,...there is less of a specialized body of knowledge, and they have less autonomy from supervision or societal control than ‘the’ professions” (p. v).

Schools of nursing evolved long before secondary schooling was fully established or mandated. Even with the introduction of baccalaureate education for nursing in 1919 and NLN efforts to standardize the nursing curriculum, the education of nurses did not progress in a uniform fashion. College attendance prior to World War II consisted mostly of males and predominately by the wealthy. The completion of post-secondary education was limited in the early 1900s, and attempts at creating minimal levels of high school requirements for nursing school applicants were realistically postulated in creating difficulties for potential students and contributed to the scarcity of potential candidates (Ashley, 1976). Women of a higher socioeconomic status, who may have been more likely to complete high school, would also be more likely to attend college, rather than a school of nursing.

Formed in 1900 by a number of college, the College Board undertook the task of developing a common entrance examination to “simplify the application process for students and college admission offices” (College Board, 2013, p. 1), thus beginning the measurement and assessment of academic preparedness by which colleges could make admissions decisions. While the NLN has made historical efforts to standardize curriculum and the ANA promoted baccalaureate education as the pre-licensure education standard, neither organization has

addressed guidelines of academic preparedness for potential candidates. Accreditation processes differ vastly, as do state regulatory guidelines, and efforts by professional leadership organizations regarding nursing education have been met with resistance. The college admissions process has become increasingly rigorous and demanding as the enrollments have progressively increased since World War II; however, the profession of nursing, with its three non-equivalent forms of pre-licensure education, lies at a disadvantage to follow the same trajectory of selectivity in academic preparedness as afforded to colleges.

In a report regarding the status of higher education, Schiff (2008) stated “a healthy nation depends on the adequate supply of well-educated and well-trained health professionals” (p. 1). Federal practices, such as not funding baccalaureate programs which provide a more scientific basis of knowledge, appears to defeat the federal government’s own data. Studies, that will individually discussed in forthcoming sections, have revealed that the foreshortened diploma programs and associate degree programs are not meeting the need for “well trained and well educated” nurses in an in an era of the knowledge explosion that has occurred in all sciences, and especially, in health care. Information regarding nursing skill and knowledge is critical since “nurses constitute the surveillance system for early detection of complications and problems in care. ...They are in the best position to initiate actions that minimize negative outcomes for patients” (Aiken, Clarke, Cheung, Sloane, & Silber, 2003, p. 1618).

2.5 DIFFERENCES IN PERFORMANCE BY PRE-LICENSURE NURSING EDUCATION

Numerous studies have demonstrated that there are measurable differences in nurses by pre-licensure education, including differences in patient mortality levels, attitudes about health education for patients, and issues regarding nurses' attitude in the workplace. While these differences were not directly attributed to the pre-licensure program type, the graduates from these programs varied greatly in skills, safety and attitudes. The differences in program length or curriculum cannot begin to explain these fundamental differences. Studies that highlight the differences in nurses by pre-licensure education will be individually discussed in the following sections.

2.5.1 Differences in Registered Nurses by Types of Disciplinary Actions

A review of the literature revealed three studies investigating disciplinary actions in the profession of nursing. Evangelista and Sims-Giddens (2008) focused on disciplinary actions as they relate to gender while Delgado (2002) investigated disciplinary sanctions with regard to initial educational preparation, making note of the discipline rates of males specifically. Kenward (2008) reviewed all disciplinary data from The National Council of State Boards of Nursing (NCSBN) from 1996 to 2008.

Delgado (2002) studied the incidence of disciplinary action for registered nurses in the state of Ohio as they related to educational preparation. She found that while associate degree-prepared nurses represented 22.5% of the Ohio registered nurses, they were disciplined at a rate of 62.8% (Delgado, 2002). Conversely, she found that while baccalaureate-prepared nurses

represented 31.8% of the nurse population, they represented only 9.3% of disciplinary infractions (Delgado, 2002). Diploma-prepared nurses represented 34.8% of Ohio nurses but were disciplined at 27.9%, a lower percentage than the associates degree-prepared nurses. Delgado (2002) also found gender differences in disciplinary rates, with males disciplined at a disproportionate rate based on their representation in the population. While representing only 2.7% of the nursing populations, males were disciplined at a rate of 18.6%. No nurses with the increased human capital of a master's degree or higher were disciplined. In this study, registered nurses with the human capital of a baccalaureate degree received less frequent discipline. Conversely, Ohio registered nurses educated at associate degree level, while representing slightly more than one-fifth of the nurses, were disciplined at disproportionately higher rate as compared to diploma-prepared, baccalaureate-prepared.

Similarly to Delgado (2002), Evangelista and Sims-Giddens (2008) echoed the differences in disciplinary actions with regard to gender. Conducted in the state of Missouri, the authors found males to have disciplinary actions taken against their licenses at a rate of 18.9% despite the fact that males represented only 7.5% of the nursing population (Evangelista & Sims-Giddens, 2008). In this study, Evangelista and Sims-Giddens (2008) also noted the specific types of disciplinary infractions, finding that substance use while at work was noted in almost one-third of the males receiving disciplinary sanctions. "Males had significantly higher rates of infractions such as drug abuse on and away from work (30.3% and 12.6% respectively), falsifying license or skill level (6.7%), medication errors (6.7%), and abusing a patient (7.6%)" (Evangelista and Sims-Giddens, 2008, p. 5). In terms of the percentage of all disciplinary actions directed against males, values ranged from 17.3% to 21.5%. Given that males represented 7.5% of the state's nurses Missouri Board of Nursing in 2004, this analysis shows

that male nurses received a share of discipline that was, “on average, 2.5 times greater than their representation in nursing” (Evangelista and Sims-Giddens, 2008, p. 6).

The data for Evangelista and Sims-Giddens was not correlated to any level of pre-licensure educational preparation; however, as noted in the March 2004 National Survey of Registered Nurses, most nurses, and more specifically most male nurses, are prepared at the associate’s degree level (U.S. Department of Health and Human Services, 2006). Referencing these statistics, it follows that Missouri would have similar statistics regarding the education levels of registered nurses. One could postulate then, that of the males disciplined in Missouri, a large portion would have been educated at the associate’s degree level. If this postulation was true, it would follow that there is notable difference of nurses educated at the associate’s degree level with regard to disciplinary measures, and more specifically so with regard to males.

Kenward’s (2008) study included sanctions against practical nurse licenses as well as against registered nurse licenses and noted similar results to those of Delgado (2002) and Evangelista and Sims-Giddens (2008). Practical nurses pre-licensure education generally exists in an approximately one-year program, having the least amount of human capital acquisition of any licensed nurse. Practical nurses have limited abilities and skill sets, practicing under the oversight of a registered nurse. The author noted that practical nurses were disciplined at a rate higher than that of registered nurses (Kenward, 2008).

Of the disciplinary actions taken, Kenward (2008) noted that only eight percent resulted in the revocation of the nurse’s license and 13% resulted in suspension, indicating that only 20% of actions that result in disciplinary sanctions are egregious enough to result in cessation of practice, whether permanently or for a specified duration. Most actions resulted in fines, reprimands, or probation, at a rate of 12%, 10%, and 14% respectively (Kenward, 2008, p. 83).

Similar to the studies of Evangelista and Sims-Giddens (2008) and Delgado (2002), Kenward found that males were disciplined at a rate of 18%. For the purposes of Kenward's study, nurses whose license had been sanctioned were categorized by the highest level of license obtained. Therefore, if a nurse had initially been educated at the practical nurse level, but had currently been practicing as a registered nurse educated at the associate degree level, there would be no way of knowing whether or not disciplined nurses had initially belonged to the practical nurse group. "Missing data make it difficult to draw any conclusions about the relationship between discipline and educational program" (Kenward, 2008, p. 83). Thus, Kenward's study indicated no correlation with regard to the initial human capital investment in education and licensure sanctions.

The theory of human capital dictates that a person's habitus (i.e., a person's attitudes and values) would inherently influence either the embrace or the avoidance of behaviors that lead to disciplinary actions (Perna & Titus, 2004). In terms of a nurse's attitudes and values, Kenward (2008) noted that nearly one quarter of the specific types of violations that were committed by nurses were drug-related, and of these infractions, nearly 18% were male. In his conclusions, Kenward (2008) addressed possible ways to reduce overall numbers of disciplinary actions via staff development initiatives:

It may well be that educating staff nurses about what conduct will likely result in board discipline and how to avoid that conduct not only can help reduce the individual nurse's likelihood of experiencing discipline but also improve patient care. (p. 83)

Based on the human capital theory, persons who have higher investments in the human capital of education would also be likely to demonstrate behaviors and attitudes that would reduce or eliminate the need to educate nurses about inappropriate behavior.

2.5.2 Differences in Patient Outcomes by Pre-licensure Nursing Education

Aiken, Clarke, Cheung, Sloane, and Silber (2003) and Tourangeau et al. (2007) found that *patient outcomes* differ by the educational preparation of the nurses that care for them. When reviewing records from a sample of 80% of Pennsylvania hospitals, Aiken et al. (2003) examined the deaths of any patients within 30 days of admission to a hospital and also specifically those patients who died within 30 days of admission as a result of complications, identified specifically as failure to rescue. Failure to rescue indicates a changing or worsening condition of a patient for which a nurse should have recognized and intervened. Thus, the designation of “failure to rescue” indicates that interventions by nurses that should have occurred did not actually occur, and the absence thereof contributed to the patients’ mortality.

Aiken et al. (2003) identified a statistical correlation between patient outcomes and the educational backgrounds of hospital nurses, finding that the risk of mortality and failure to rescue could be decreased by 5% for every 10% increase in nurses with higher degrees. Additionally, these authors discovered that a 19% decrease in the 30-day mortality and failure to rescue rates existed in a hospital where 60% or more of nurses had baccalaureate degree (Aiken et al., 2003, p. 1622). Aiken et al., (2003) also found that community hospitals prefer to have about 55% of their nurses educated at the baccalaureate level while teaching hospitals associated with a university prefer a workforce 70% of which is composed of baccalaureate nurses. In actuality, only 11% of the sample of Pennsylvania hospitals had either of these desired levels of staffing. Based upon these findings, Aiken et al. (2003) stated:

Public financing of nursing education should aim at shaping a workforce best prepared to meet the needs of the population. Finally, our results suggest that employers’ efforts to recruit and retain baccalaureate-prepared nurses in bedside care and their investments in

further education for nurses may lead to substantial improvements in quality care. (p. 1624)

In 2006, Tourangeau et al. published similar findings. Tourangeau et al. (2006) studied the 30-day mortality rate of acute medical patients in all teaching and community hospitals in Ontario, excluding any specialty hospitals. The researchers focused on mortality rates for four of the most common medical diagnoses: acute myocardial infarction, pneumonia, septicemia, and stroke. While analyzing 19 total variables within a large sample of patients with these diagnoses ($N = 46,993$), Tourangeau et al. (2006) found five of the variables were significantly related to patient mortality, one of which was the proportion of baccalaureate prepared nurses ($p = 0.057$). When the authors conducted a backward regression, it revealed “forty-five percent of variance in 30-day mortality was explained by eight predictors” (p. 40). Similar to Aiken et al.’s (2003) findings, Tourangeau et al. (2006) found that the educational background of nurses was significantly influential ($p = 0.027$), concluding that a “10% increase in proportion of baccalaureate-prepared nurses was associated with nine fewer deaths for every 1000 discharged patients” (p. 41).

These two studies supported the idea that nurses with the higher human capital acquisition of a bachelor’s degree demonstrate more favorable patient outcomes. Habley and McClanahan (2004) noted that an individual’s habitus can be reflected by the individual’s academic preparedness, which affects individuals’ post-secondary choices and chances for acceptance into HEIs with rigorous admissions criteria. While Aiken et al. (2003) and Tourangeau et al. (2006) examined the correlations between the educational preparation of nurses and patient outcomes, individual habitus and academic preparedness as potential contributors to such differences were not considered in these studies.

2.5.3 Career-related Disparities by Pre-licensure Nursing Education

The studies of Goode et al. (2001); Ingersoll, Olsan, Drew-Cates, DeVinney, and Davies (2002); and Rambur, McIntosh, Palumbo, and Reinier (2005) focused on establishing differences among registered nurses in workplace related issues, such as retention, satisfaction, professional behaviors, critical thinking skills, and commitment to their employer.

In 2001, Goode et al. stated the trend of shorter hospital stays for patients with increased acuity “led chief nursing officers (CNOs) to conclude that the RN work force needs to be well educated, have sound critical thinking skills, and to be capable of providing complex care” (p. 59). Goode et al. (2001) surveyed the perceptions of CNOs in university-affiliated (academic) hospitals, finding that a large majority of CNOs (71%) stated that they perceived baccalaureate-educated nurses to possess “better critical thinking skills than AD or diploma nurses, [as well as being] less task oriented than the AD or diploma nurses” (p. 58). When CNOs compared associate’s- and baccalaureate-prepared nurses, they felt that baccalaureate-prepared nurses behaved more professionally, possessed better communication skills, demonstrated better leadership abilities, and focused more on patient teaching and outcomes, leading CNOs to indicate a preference for baccalaureate educated nurses (Goode et al., 2001).

Not only have CNOs expressed a preference for baccalaureate-prepared nurses, but baccalaureate-prepared nurses have also shown higher levels of professional satisfaction. Ingersoll, et al. (2002) examined the educational preparation of registered nurses as it related to job satisfaction, commitment to their employing organization, and intention to remain at versus leave the employing institution and/or nursing. This study also included master’s prepared nurses, but did not identify the master’s level cohort based upon their initial pre-licensure level of education. In this study, nurses with a master’s degree indicated the highest level of

satisfaction with their position (Ingersoll et al., 2002). Conversely, nurses possessing two-year associate's degrees expressed the least job satisfaction and the lowest commitment to their institutions of employment (Ingersoll et al., 2002). Hence, the authors concluded that nurses with more education had better outcomes in regards to job satisfaction, aligning with the ideas expressed in human capital theory. Because nurses with associate's degrees constituted the largest amount of pre-licensure nurses, Ingersoll et al. (2002) asserted that their diminished perceptions for satisfaction and commitment may "impact the overall well-being and perception of the work environment" (p. 259).

Expanding on the work of Ingersoll et al. (2002), Rambur et al. (2005) evaluated nurses educated in associate's or baccalaureate programs. (Nurses receiving a diploma rather than a degree were not included the study, though there was no explanation as to why this group was excluded.) The authors discovered that baccalaureate-prepared nurses were significantly more satisfied with the level of job stress and physical demands ($p = .0002$). These nurses also expressed satisfaction with their job and organizational security ($p = .0002$) and indicated that they were more satisfied with opportunities for autonomy and growth ($p = .01$). The authors concluded that "baccalaureate education provided a greater return on investment at both private individual and societal levels" (Rambur et al., 2005, p. 192). These findings are congruent with the theory of human capital, thus reflecting an individual's habitus with regard to attitudes and values. Rambur et al. (2005) asserted that "additional education has social-psychological returns as a consumer good. Professional identification and broader knowledge results in higher levels of job satisfaction, which in itself is a reward and a return on investment" (p. 186).

2.5.4 Differences in Health Practices as Related to Professional Behaviors

Other differences between nurses with different educational backgrounds relate to personal health attitudes and behaviors. Health behaviors and practices may be reflective of the attitudes and values which are indicative of human capital (Becker, 1962, p. 3; Perna & Titus, 2004). Three main studies have discussed the relationship between the pre-licensure educational preparation of nurses and health behaviors, specifically in regards to smoking: Rausch, Zimmerman, Hopp, and Lee (1987); Patkar, Hill, Batra, Vergare, and Leone (2003); and Jenkins and Ahijevych (2003).

In 1987, Rausch et al. began investigating the relationship between nursing education level and healthy practices. Historically, this study provides an interesting contribution to the narrative about differences in education. At the time of this study, smoking was still permitted in hospitals by patients and staff, more diploma programs existed, and fewer students enrolled in four-year baccalaureate programs. As explained by Becker (1962), healthy behaviors and practices may be reflective of attitudes and values indicative of human capital. Hence, at a time in which fewer nurses were obtaining degrees with higher human capital, it could be hypothesized that these unhealthy behaviors might be prevalent in the 1987 nursing population. Rausch et al. (1987) examined the smoking prevalence of senior nursing students from diploma, associate degree, and baccalaureate degree programs, and in fact, they did find that over one quarter (26%) of the sample of student nurses engaged in smoking. Of these, the diploma had the highest incidence of smokers (30%) followed by 26% of the associate degree students. The baccalaureate students had the lowest incidence (24%) of the students who smoked. As can be seen, the more education a nurse possessed, the less likely it was for him or her to smoke, thus indicating better health practice in better-educated nurses. Rausch et al.'s (1987) study provided

support to Becker's ideas regarding human capital and healthy behaviors, as the student nurses with the higher human capital (i.e., the highest degree) were more likely to engage in healthy practices and behaviors.

Students who are smokers could be purported to have lesser human capital values than non-smokers, which may negatively affect outputs in terms of the patient teaching aspect of their nursing care. Because of the importance of this issue, studies regarding the health behaviors of nurses and the medical profession continued to be conducted in the decades following Rausch et al.'s (1987) work. In 2003, Patkar et al. compared the smoking practices of medical students (which are graduate students) and baccalaureate nursing students (which are undergraduate students) in a private, health-related university. While these baccalaureate nursing students had higher measures of human capital as compared to associate degree or diploma-prepared nurses, they had far less human capital acquisition than medical students. According to the theory of human capital, these baccalaureate nursing students should have been more likely to engage in non-healthy behaviors as compared to the graduate-prepared medical students. Patkar et al.'s (2003) findings supported this assumption: significantly fewer medical students engaged in smoking when compared with nursing students, 3.3% and 13.5% respectively ($t = 16.62$; $p < 0.0001$).

Furthermore, the advanced educational preparation of the medical students has connections to socioeconomic status, which in turn indirectly indicates some types of human capital. When considering the medical students' advanced degree, socioeconomic status, and lower prevalence of smoking, it could be concluded that medical students have much higher inputs of human capital than do baccalaureate-prepared nurses, which indirectly translates to higher indirect outputs in terms of patient care. Relying on this logic and the human capital

theory, one could logically assume that nursing students from non-baccalaureate programs may well have higher rates of smoking, such as seen Rausch et al.'s (1987) work. Smoking behaviors of students as anticipated health care professionals is an important construct about which to be concerned because of their role in providing health teaching. "The approach and credibility of future physicians and nurses as treatment providers for smoking and tobacco-related diseases may be influenced by their smoking habit" (Patkar et al., 2003, p. 1415).

Jenkins and Ahijevych (2003) validated Patkar et al.'s (2003) concerns regarding the influences of nurses' personal smoking habits and their approach for patient treatment. Jenkins and Ahijevych (2003) examined the beliefs about smoking and the related behaviors of nursing students enrolled in a public research university. Specifically, Jenkins and Ahijevych (2003) found significant influences on the anticipated amount of patient health teaching that would be provided related to smoking cessation: "Thirty-three percent of smokers indicated they would counsel all or most patients [regarding smoking cessation] compared with 49% of non-smokers who would do so" (p. 170). Their findings noted that while 12% of nursing students reported being former smokers, a significantly lesser number of respondents were smokers at the time of the study (6%).

The disturbing reality regarding the attitudes and values about smoking, which are part of a nursing student's habitus (i.e., human capital input variables) have been specifically demonstrated to affect the manner in which they professionally influence the health values and attitudes of their patients. It is a given that nursing schools would teach risks of smoking as a risk factor for cardio-vascular diseases; however, with regard to health counseling for smoking cessation, nursing students who smoke were 16% less likely to provide health teaching about smoking cessation (Jenkins & Ahijevych, 2003). The students' personal attitudes, practices, and

values about smoking become an indirect outcome or performance indicator as related to patient care. Hence, smokers, which could be purported to have lesser human capital than non-smokers, may have negatively affected outputs in terms of the patient teaching aspect of their patient care.

Patient education aimed at smoking cessation is an important component in the reduction of cardio-vascular diseases. That nurses would have a differing likelihood to promote this type of education within the context of their patient care may be reflective of personal attitudes and values (i.e., habitus) that transcends any program for pre-licensure nursing education.

2.5.5 Summary

Long (2003) noted that in some components of nursing practice (e.g., practical nurses or nurses in an advanced specialty such as a nurse practitioner) the licensure is “based upon academic differences” (p. 123). This premise does not hold true for the registered nurse. While the three distinctive, dissimilar, and non-equivalent forms of education result in the identical licensure, it is clear that there are distinctly differing outcomes.

The noted differences in health promotion behaviors, job satisfaction, professional behavior, and critical thinking skills between nurses with different academic credentials are of concern to the present and future of the nursing profession. In addition to the actual differences in pre-licensure programs in terms of length and curriculum, evidence demonstrated clear and troubling differences in the abilities of nurses with different educational preparation, especially in regards to mortality rates. Considering that a patients’ ability to survive a medical condition or surgical procedure could depend on a nurse’s level of pre-licensure education, evaluating the more subtle differences about the candidates who select the differing programs for pre-licensure nursing education seems warranted.

Again, irrespective of a nurse's pre-licensure program, it is important to recall that graduates of each pre-licensure program sit for the same licensure examination: the NCLEX-RN. Despite any limiting factors, stakeholders view licensing examinations such as the NCLEX-RN as measures of outcomes and accountability. In other words, because all register nurses passed the same licensing exam, they should possess the same necessary ability and skill as any other nurse completing the licensing exam. Clearly, the literature has proven this supposition to be false. Data such that was provided in the studies validate that there are elusive and imperceptible differences of nurses beyond the obvious dissimilarities in the programs of nursing education; *pass-through tendencies* of the individuals themselves, having evolved *apart from the educational treatment*. Such differences are not identified by the licensing examination but may begin to be explored from the theory of human capital. Further research in this area is justified.

2.6 HUMAN, CULTURAL, AND SOCIAL CAPITAL: RELEVANCE TO PRE-LICENSURE PROGRAMS FOR NURSING EDUCATION

The theory of human capital establishes a foundation for the explanation of nurses as individuals with regard to the differences associated with pre-licensure program type. Such differences cannot be attributed to program length or curricular differences and cannot be measured by tests such as the NCLEX-RN. The term "*knowledge economy*" evolved in the post-industrial period to explain "greater reliance on intellectual capabilities than on physical inputs or natural resources" (Powell & Snellman, 2004, p. 199). Critical to the further understanding of a knowledge economy are the opposing constructs of acceleration and obsolescence, specifically

as they relate to a scientifically based discipline such as is the profession of nursing. Those upheld as professionals are considered “to be ‘learned’—[in] an occupation requiring high levels of training and proficiency” (Gove, 2002, p. 1811). Professionals within a discipline practice with an expectation that their skills are “reflective of education, training and experience” (Gove, 2002, p. 1811).

Section § 21.81 (c) of the PA Code indicated that pre-licensure education for nursing should promote a strong scientific approach to practice, resulting in a candidate with an extensive scientific knowledge base and the ability to *utilize* the principles of scientific inquiry. Together the theory of human capital and the definition of a professional, based upon the PA Code, uphold the premise that nurses should possess the levels of human capital acquisition reflective of a professional. “At the macro economic level, human capital contributes greatly to the growth of aggregate productivity...” (de la Fuente and Ciccone, 2002, p. v). As exposed earlier in the literature review, variances in individual nursing actions differ markedly by per-licensure human capital acquisition, showing that individual nursing actions can result in micro-economic level improvements of patient care. Based upon this premise, de la Fuente and Ciccone (2002) concluded:

First, investment in human capital contributes significantly to productivity growth. Second, there is clear evidence that human capital plays a key role in fostering technological change and diffusion. Third, human capital investment appears attractive relative to alternative assets, both from the individual and from the aggregate perspective. Fourth, policies that raise the quantity and quality of the stock of human capital are comparable with increasing social cohesion. (p. 3)

As opposed to shorter, non-baccalaureate programs, the human capital investment of a baccalaureate degree for pre-licensure nursing education has been shown to positively influence overall nursing productivity (de la Fuente & Ciccone, 2002). Thus, it is important to understand the pervasive influences of individual nurses with regard to human capital acquisition, as it has been demonstrated to have significant influences on nurses' professional attributes, abilities, and attitudes. Such differences may emanate from an individual nurse's habitus that is associated with the acquisition of educational levels of human capital.

2.6.1 Human, Cultural, and Social Capital Influences on Higher Education

The concepts of human capital, cultural capital, and social capital as they relate to higher education are closely intertwined and affect everything about an individual, from attitudes and beliefs, to decisions to embrace or forego post-secondary or higher education. Conversely, a person's lack of human capital, cultural capital, or social capital can also be a determining influence for decisions regarding participation in non-social behaviors, such as criminal activity. Specifically, human capital, which relates more closely to an individuals' ability and personal assets, relates to educational success and attainment:

“Earning profiles are steeper for high ability agents since early in life they allocate a relatively larger fraction of their time to human capital production and thus have low earnings, while their time allocation decisions and high learning ability imply that later in the life-cycle they have higher levels of human capital and, hence, earnings.” (Huggett, Gustavo, & Yaron, 2006, p. 268)

As this quote illustrates, the investment in developing human capital early in life paves the way for higher earnings and success later in life.

For the purpose of this work, the operational definition of human capital refers to *an individual's attributes, which intrinsically belong to the individual and cannot be transferred to, or bestowed upon, another individual*. Human capital may include resources such as skills, abilities, education, or health attitudes and beliefs and their associated personal behaviors and practices. A person accrues and compiles human capital by engaging in actions such as obtaining higher education or a specific certification within a profession. These accruals, or investments, in human capital are “banked” for the purpose of payable dividends later in the individual’s life, including dividends such as salary, position, prestige or wealth. Human capital is pervasive in all aspects of an individual’s life.

Human capital is distinct from, yet often dependent upon, the concepts of social capital. Woolcock and Narayan (2000) defined social capital as “the norms and networks that enable people to act collectively” (p. 226), but for the purposes of this literature review, social capital refers to *the resources available at large to a general population* (Woolcock and Narayan, 2000). The broad aspect of social capital refers to an individual’s access to social resources that “may be invested to enhance productivity and facilitate upward mobility [whereas] social capital refers to the social networks and the ways in which social connections are sustained” (Perna & Titus, 2004, p. 506). Social capital includes socioeconomic status and the benefits, results, and limitations associated with it. With reference to the concept of human capital, Perna and Titus stated that “an individual's stock of human capital is measured in the individual’s *academic achievement and quality of academic preparation* [emphasis added]” (Perna & Titus, 2004, p. 508). Examples of this concept include K-12 education, funding for higher education, and neighborhood resources such as libraries, crime rates, and the presence or absence of business in the community.

Although ‘social’ and ‘cultural’ capital are sometimes used interchangeably in the literature, the two terms are discussed separately in this literature review. The operational definition of cultural capital refers to specific groups that influence aggregates as well as individuals (Perna & Titus, 2004). These groups may include family, ethnic, religious, or socially based groups. Social capital, habitus, and cultural capital influence an individual’s desire and ability to obtain higher education (i.e., human capital), and they additionally offers some explanation for an individual’s success within their chosen program of higher education (Horn et al., 2001; Horn & Nuñez, 2000; Perna, 2005; Shavit & Muller, 2006).

2.6.2 Education in Human Capital Acquisition

In his theoretical analysis, Becker (1962) stated that the process whereby people invest in human capital is realized in the “activities that influence future real income through the imbedding of resources in people” (p. 9). While writing before the concept of a knowledge economy, Becker (1962) did discuss that earlier economists focused on physical capital – items such as money, investments, or property. Additionally, Becker spoke about the “spread of education” (p. 40) as it related to the progress of technology.

Becker (1962) considered education an investment that an individual undertakes to have marketable assets. When describing education as an investment, Becker (1962) included forgone earnings while actually in school as well as costs directly associated with school, such as tuition, transportation, or housing. By subtracting the costs of education from gross earnings, net earnings would be calculated to be high, or said to have a high rate of return (Becker, 1962). Similarly, Perna and Titus (2004) declared that “economic theoretical approaches posit that an individual makes a decision about attending college by comparing the benefits with the costs for

all possible alternatives and then selecting the alternative with the greatest net benefit”(p. 505). These authors spoke to the decision to attend a four-year college or university versus a two-year college. Other types of post-secondary schooling, such as vocational or technical programs of study were not included in the discussion.

The profession of nursing directly contradicts portions of Becker’s (1962) explanation of human capital by maintaining the existence of three dissimilar and non-equivalent forms of pre-licensure human capital acquisition. Students choosing a hospital-based diploma program or an associate degree program invest less in terms of actual time, foregone earnings, and costs associated with a four-year baccalaureate program. However, while the inputs into human capital are different depending on the chosen nursing pre-licensure program, human capital dividends for these nurses is similar: each program graduate gains access to licensure and earning abilities. Perna and Titus (2004) posited that individuals select “the alternative with the greatest net benefit” (p. 505), which may be generalized to affect a potential nursing student’s decision to attend a shorter program with lesser costs and fewer resources while still being afforded the opportunity for identical licensure, duties, and salary.

2.6.3 Family and Socioeconomic Status Influences on Human Capital Acquisition

Prior to the traditional age of attending of post-secondary schooling, an individuals’ habitus is affected by the formative influences of the family and the social environment in which they reside:

No discussion of human capital can omit the influence of families on the knowledge, skills, values, and habits of their children. Parents affect educational attainment, marital

stability, propensities to smoke and to get to work on time, as well as many other dimensions of their children's lives. (Becker, 1962, p. 3)

Perna and Titus (2004) described the resulting influences of family and/or social and cultural capital as habitus. Defined as “the internalized system of thoughts, beliefs, and perceptions acquired from the immediate environment, [which] conditions an individual's expectations, attitudes and aspirations” (Perna and Titus, 2004, p. 506), habitus is substantially formed prior to the age of post-secondary school attendance. Thus, an individual's habitus is likely to transcend and pervade throughout post-secondary educational attainment.

DiMaggio and Mohr (1985) included education in their understanding of cultural capital, stating that education is “often treated as a proxy for human capital or labor market position” (p. 1232). Based on this premise, measures of academic preparedness are proxies reflective of habitus. These proxy measures may provide one basis by which to explain the differences in nurses as related to pre-licensure program type.

2.6.4 Human Capital Acquisition and Academic Preparedness in Nursing

Early in the history of the nursing profession, the connection between social class and education was observed in nursing, noting the effects of these variables both on and by human capital (Friss, 1994, p. 599). As noted in Reverby (1987), Adelaide Nutting, a nursing leader in 1912, stated that nursing schools admitted students who were “pupils of pitifully low educational attainments and mental ability” (p. 93). Also of note was the discrepancy of candidates' academic preparedness admitted to different nursing programs *based upon the school's standards* [emphasis added]. “*Admission standards often correlated with size and prestige of the school* [emphasis added] as well as the hospital with which it was affiliated. *Selectivity was bi-*

directional [emphasis added]; affected by both the position of the candidate seeking admission, and that of the institution seeking applicants (Reverby, 1987, p. 94). The differences in academic selectivity as related to program type and institutional control was established very early in the history of nursing education.

The discrepancy of associated costs between colleges and schools of nursing and the resulting differences in social and cultural capital was also identified early in the history of nursing education. At the time, “the college-bred woman [took] up teaching, or music or art, or [sought] to adorn society;” however, females from families without the resources for college found that “the training school for nurses affords an opportunity for such girls to fit themselves for lucrative work with *very little outlay or expense during the time of training* [emphasis added]” (Catlin as noted in Reverby, 1987, p. 79). Though segregated by gender, women’s colleges maintained a sense of educational equivalency to that of the all-male colleges in terms of human capital acquisition; yet, nursing schools were not equivalent alternatives to women’s colleges:

Nursing thus became, for some women, a less elite equivalent of an education in womanly virtue and female solidarity afforded their richer sisters in the women’s colleges...unlike students in the women’s colleges, nurses were strongly discouraged from developing either independent thinking or autonomy. (Reverby, 1987, p. 58)

Hence, nursing schools were substantially different from four-year women’s colleges in terms of attendees and educational discourse.

Perhaps even to a larger degree than in the early 1900s, socioeconomic status still influences choices regarding post-secondary education. “Decreasing shares of students from middle- and upper-income families are enrolling in public two-year institutions, while increasing

shares of students from upper-income families are enrolling in public and private universities” (Perna & Titus, 2004, p. 502). Academic preparation and achievement affect the choice to attend higher education, all of which are influenced by habitus and socioeconomic status (Perna & Titus, 2004). Beattie (2002) indicated that “SES [socioeconomic status] is a durable predictor of college attendance” (p. 30), and college attendance is viewed by the higher SES groups as a “birthright” (p. 36).

High school graduates in the *lowest quartile of SES are less likely to enroll in any type of college or university* [emphasis added]...Compared with high school graduates with SES in the middle two quartiles, high school graduates in the highest quartile of SES are 1.78 times more likely to enroll in an in-state public four-year institution, 2.20 times more likely to enroll in an in-state private four year institution, and 4.14 times more likely to enroll in an out-of-state institution rather than an in-state public two-year institution after other variables are taken into account. In contrast, high school graduates in the lowest quartile of SES are less likely to enroll in an in-state public four-year institution (odds ratio = 0.75) or an out-of-state institution (odds ratio = 0.70) than enroll in an in-state public two year institution after taking into account student and state-level variables. (Perna & Titus, 2004, pp. 517-518)

When examining the different outcomes for nurses of differing educational preparation, it is important to recall this information. Based upon the research of Perna and Titus (2004), candidates who enroll in either of the non-baccalaureate pre-licensure programs are more likely to be from the lowest SES quartile and less academically prepared. Additionally, these individuals are more likely to emanate from a habitus with differing value systems that would transcend the boundaries of any pre-licensure program type.

2.6.5 Occupational and Vocational Education in the Hierarchy of Post-Secondary Education

In terms of human capital acquisition and the necessary academic preparedness by different levels of post-secondary education, it is important to understand the relevance of the habitus of candidates who select non-baccalaureate forms of pre-licensure nursing education. As noted by Perna and Titus (2004), high school graduates of the lowest SES quartile are those who are most likely to enroll in two-year programs of education. These two-year programs tend to focus more on occupational or vocational education. However, “student poverty and vocationalism...and serious intellectual or academic interests” are “countervailing forces,” according to Clark and Trow (1996, p. 21).

While speaking to differing college cultures and their students at that time, Clark and Trow (1996) identified characteristics, or habitus, of those seeking education from a vocational perspective. Vocationally-driven students sought education as a means to better paying employment and “buy their education somewhat as one buys groceries...scholarship is as much a luxury [as a] distraction” (Clark & Trow, 1996, p. 21). As a means-to-an-end approach, this vocationally-driven student displayed little interests in the academic pursuit of ideas and little identity with their institution of education; rather, these students were classified as “job-oriented and pursu[ing] skills” (Clark & Trow, 1996, p. 22). The academic culture of four-year colleges differed from that of vocational schools, with Clark and Trow stating that four-year college students have a “system of values” (pp. 22-23) geared toward attainment of high grades through intellectual activities and association with students of a similar mindset. This system of values is reflective of an individual’s habitus.

Attitudes toward vocational education have been bleak. “Historically, vocational education [career and technical/workforce education] at the secondary and postsecondary levels has suffered from a ‘second class citizen’ image” (Ruhland & Brewer, 2001, p. 141). Vocational education links education with a specific job skill, and in doing so, links a student to an employer in a phenomenon termed as “occupation destination” (Shavit & Muller, 2006, p. 444). From their inceptions, hospital-based diploma and associate degree programs may have established an image that candidates for nursing schools need not be as academically prepared as is necessary for a four-year college. While some better schools of nursing sought and accepted candidates of higher SES, others by contrast “more willingly accepted women who had been nursing school dropouts, domestics, housekeepers, or untrained hospital nurses” (Reverby, 1987, p. 87-88). When compared with that of a college education, “vocational qualifications may signal to [an employer] that the job applicant has a low aptitude, or is a troublemaker, for why else would he or she have attended a vocational track rather than an academic one (Shavit & Muller, 2006, p. 439).

2.6.6 Human Capital and Higher Education Institutional Selectivity

Since it has been noted that nursing programs have had challenges in attracting high quality candidates since their inception, it is of interest to note how current patterns of institutional selection and enrollment may affect baccalaureate versus non-baccalaureate programs. Both Pascarella et al. (2006) and Carnevale and Rose (2003) have indicated that highly selective colleges have a self-perpetuating image by attracting high quality students, which in turn maintains the high quality of the institution. Additionally, the presence of a highly selective student body exposes students to like-minded and peers with similarly high intellects (Carnevale

& Rose, 2003; Pascarella et al., 2006). Clark and Trow (1996) explained the importance of a highly selective homogenous student body as follows:

attachment is to the institution which supports intellectual values and opportunities for learning; the emotional tie to the college is through the faculty and through campus friends of similar mind and temper...they are seriously involved in their coursework beyond the minimum required for graduation and passing. (pp. 22-23)

In professions requiring higher levels of academic preparedness, admissions processes presumably attract like-minded and high quality students. Given the applicant pool of higher levels of academic preparedness and the similar mindset, an institution gains the luxury of becoming increasingly more selective with its applicants. By requiring an investment in the educational process beyond that of the baccalaureate degree, one could conclude that students enrolling in professions that require graduate education for entry into practice, such as that of pharmacy and physical therapy, would emanate from an higher levels of SES (as described by Beattie, 2002; Perna & Titus, 2004). Accordingly, the academic preparation and achievement of the candidates would also be presumably high. Therefore, institutional selectivity must be congruent with the objective that students succeed through an extended course of education.

Conversely, it may be presumed that the non-baccalaureate programs of pre-licensure nursing education may not be situated, by virtue of the NCES classifications, to command high measures of academic preparedness. As noted previously, “decreasing shares of students from middle- and upper-income families are enrolling in public two-year institutions” (Perna & Titus, 2004, p. 502). Logically, it would also follow that decreasing shares of higher SES students would enroll in vocational and occupational educational choices as well. If this presumption were true, then the occupational/vocational programs for pre-licensure nursing education would

have a limited likelihood of attracting students with high levels of academic preparation and achievement that tend to emanate from middle and upper income families. The human capital theory provides a basis for understanding potential variances in institutional selectivity of pre-licensure nursing education programs based upon the diverse levels of academic preparedness of the potential applicant pool.

2.6.7 The Importance of Human Capital and Economic Returns of Education by Qualifications

The human capital theory provides contextual insight into the economic rationale by which individuals may or may not select nursing as a career. Beattie (2002) suggested “that youths act as ‘adolescent econometricians’ [by] assessing the added value of education in terms of their expected income returns to schooling” (p. 19). Specifically, Beattie (2002) found that SES stratification importantly altered the calculations and decisions made by these adolescent econometricians.

In 1983, the economic value of pre-licensure nursing education programs was evaluated. Mennemeyer and Gaumer (1983) discovered that baccalaureate degree educated nurses were compensated by only a slightly wage higher than non-baccalaureate degree nurses. At the time, approximately 80% of nurses holding supervisory positions were educated at the diploma level, which led to the conclusion that nurses in these positions who possessed higher education degrees were underpaid (Mennemeyer & Gaumer, 1983). Mennemeyer and Gaumer (1983) asserted that diploma nurses in supervisory positions were “supposedly under-qualified for their positions...[and] their lower administrative salaries may reflect an employers’ discount for low qualifications” (pp. 41-42), which in turn affected the more educated baccalaureate nurses.

Referring to the concept of “econometricians” Mennemeyer and Gaumer (1983) found that the best investment for pre-licensure education in nursing at the time was the associate degree. This conclusion was reached after adjusting for loss of forgone earnings caused by the longer time commitment of baccalaureate programs, the increase in actual costs of a baccalaureate education, and lifetime earnings. Associate degrees programs offered a markedly reduced investment of time and money when compared to a baccalaureate degree, yet resulted in similar earning structures, making the selection of an associate program the better decision for the student econometrician.

In a capitalist society such as that of the United States, items afforded value and worth are able to command higher prices. This mentality carries over into professions: “Earning profiles are steeper for high ability agents” (Huggett, Gustavo, & Yaron, 2006, p. 268). For example, physicians, educated at the graduate level, are better compensated monetarily than registered nurses. While incurring the costs of the education itself and the loss of forgone earnings while in attendance at longer programs of education (e.g., medical school), the “costs” are seen as an investment in human capital that will have positive and higher returns in the future.

As a comparison, the NSSRN explained the concept of earning profiles as it related to nurses’ wages. In 1980, the Actual Average Annual Salary (AAAS) and the Real Annual Average Salary (RAAS) were identical at \$17,398 (U.S. Department of Health and Human Services, 2006). In 2004, the AAAS was listed at \$57,785 (U.S. Department of Health and Human Services, 2006). The data from 2004 is important in this work as it is reflective of the time period in which most of the studied cited in this work, occurred. While this may seem to be a substantial increase, based on the Consumer Point Index (CPI) for urban consumers “to adjust

for the changes in the purchasing power of the dollar against the actual earnings of full time employment for obtaining ‘real’ average earnings [Real Annual Average Salary]” (U.S. Department of Health and Human Services, 2006, p. 20), the RAAS for this salary is determined to be only \$26,645. This means that the actual purchasing power of a nurse’s salary is approximately one-half of the actual figure. It is a given that lower human capital investments in education have lower rates of return than higher investments in education.

From an economic standpoint, nurses’ salaries have not kept up with economic trends. It would follow that more knowledgeable and capable students would choose professions more likely to monetarily compensate their academic preparedness and skills in the true spirit of an econometrician (Beattie, 2002). The mentality that lower salaries indicate lower value professions could contribute to a “brain drain” situation within the profession of nursing: Nursing schools may have increasing numbers of less academically prepared students, forcing the schools to lower the selectivity of admissions standards in terms to ensure program viability.

2.6.8 Human Capital’s Relationship to Negative Social Behavior

The human capital theory may provide insight into an individual’s decisions to engage in negative social behaviors, such as those that identified in the compilation of the specified infractions for the disciplinary actions rendered against professional nurses’ licenses. As stated earlier, levels of human, social, and cultural capital may influence adverse life decisions, such as engagement in criminal activity. Freeman (1996) noted that for the population of incarcerated males, as of 1993, “two-thirds had not graduated high school” (p. 26). Conversely, Lochner (2004) stated “human capital investments also increase the costs associated with incarceration” (p. 811), adding that uneducated younger males commit most of the crimes, which are typically

either violent or against property (p. 830). However, individuals who commit white-collar crime (e.g., forgery, fraud, embezzlement, or counterfeiting) tend to have higher educational attainment (Lochner, 2004, p. 840). Aside from white-collar crime, criminal behavior is inversely proportionate to high levels of human capital acquisition.

Academic literature has validated that there are indeed differences of registered nurses by pre-licensure level of educational preparation with regard to disciplinary actions (Delgado, 2002; Evangelista & Sims-Giddens, 2008; Kenward, 2008). When compared to baccalaureate-prepared nurses, disproportionate numbers of disciplinary actions taken against nursing licensure exist for associate degree-prepared nurses, especially in regards to males (Delgado, 2002; Evangelista & Sims-Giddens, 2007; Kenward, 2008).

The concept of human capital is discussed by disciplines such as economics, sociology, criminology, and education. The acquisition of human capital is influenced by family, social status, and personal ability. While human capital can be easily measured by the number of years of education and related earnings, it is not easily measured in less tangible areas, such as health behaviors. As noted earlier, if “higher education enrollment patterns are stratified by SES” (Perna & Titus, 2004, p. 518) and non-white collar criminal activity is inversely related to educational attainment, then one could conclude that nurses subject to disciplinary actions rendered against their professional licenses would hail from both a lower SES and a lesser trajectory of educational preparation. Researchers have illustrated correlations between SES and educational preparation in the general post-secondary population concerning the selection of four-year colleges and universities as opposed to the selection of a two-year college (Perna & Titus, 2004).

More specifically, a greater investment of time and/or costs to obtain human capital may serve as a deterrent to professionals not wishing to jeopardize their ability to practice in a profession (Lochner, 2004; Mocan, Billups, & Overland, 2005). For a licensed professional, the negative costs associated with criminal activity include lost wages and the potential loss of license, wages, and status within the profession (Lochner, 2004; Mocan et al., 2005). Thus, the propensity for negative social behaviors associated with disciplinary actions are reduced with increased human capital acquisition. The Pennsylvania State Board of Nursing issues an estimated 200 sanctions yearly against professional nursing licenses, some of which are for criminal activity (Active Counts RN Licenses, 2011). These infractions incur against approximately 1% of the 210,998 registered nurses in Pennsylvania (Active Counts RN Licenses, 2011).

2.6.9 The Human Capital of Registered Nurses in the United States

Given the significance of human capital acquisition, it is important to view the profession of nursing in terms of its current educational status. Since 1977, the National Survey of the Registered Nurse Population (NSSRN) has compiled data every four years regarding the educational status of nurses. Data included in this literature review has largely relied upon the 2004 NSSRN (U.S. Department of Health and Human Services, 2006) and the 2008 NSSRN (U.S. Department of Health and Human Services, 2010), and many of the previously discussed studies about nursing education were conducted during this time. Statistics revealed that nursing had been, and remained, a predominantly female profession with males constituting only 5.8% of registered nurses in 2004 (U.S. Department of Health and Human Services, 2006). Additionally, these males were more likely to have selected an associate degree program:

Approximately 13.5 percent of male RNs graduated from diploma programs, compared with 25.9 percent of female RNs; and 52.0 percent of male RNs graduated from associate degree programs, compared with 41.6 percent of female RNs. (U.S. Department of Health and Human Services, 2006, p. 25)

Please see Appendices E and H for more demographic information regarding the 2004 nursing population.

Gender aside, the majority of the nurses were not educated at a baccalaureate level – almost two-thirds of all nurses graduated from non-baccalaureate programs (U.S. Department of Health and Human Services, 2006). More specifically, 67.5% of females graduated from non-baccalaureate programs, and 65.5% of males graduated from non-baccalaureate programs. Thus, in 2004, most of the nurses in practice acquired lesser amounts of human capital in terms of pre-licensure education.

Combined with the construct of habitus, the aforementioned concepts of human, social, and cultural capital offer a theoretical basis by which to understand the increased frequency of disciplinary actions and practice errors as correlated with pre-licensure preparation. Additionally, in terms of an individual's attitudes and beliefs, these concepts provide insight to understanding the propensity for alcohol- and drug-related disciplinary actions among non-baccalaureate programs for pre-licensure education.

2.6.10 Selection of Nursing as a Career by Gender

As previously discussed, males are a significant minority within the profession of nursing; yet, they account for a significantly higher rate of disciplinary actions against their licenses (Delgado, 2002; Evangelista & Sims-Giddens, 2007; Kenward, 2008). Hence, it seems warranted to

explore the habitus and motivations of males who choose nursing as a profession, especially in regards to those prepared in associate degree programs.

Boughn (2001) studied the rationale for choosing nursing as a career, identifying three common threads among responses for both male and female respondents: “caring, power, and practical motivations” (p. 15). In Boughn’s (2001) study, most respondents were classified as middle class, with no significant differences in socioeconomic status along gender lines; yet, in regards to motivation, males more commonly expressed the expectation of a good salary (Boughn, 2001). The importance of salary as identified by male respondents is interesting. As discussed earlier, NSSRN data illustrated a flattening of the purchasing power of nurses’ salaries over the years from 1980 to 2004 (U.S. Department of Education, 2006). Consequently, this data represented a flattening of physical capital remuneration and acquisition as well.

Further analysis regarding the interpretation of the expectation of a good salary is necessary, given Beattie’s (2002) discussion of the econometrician. An exploration of the concept of habitus and social capital may provide insight, especially regarding the choice of pre-licensure program. According to Perna and Titus (2004), candidates from a higher SES, would be less likely to select diploma or associates degree programs. Instead, due to their higher human and social capital base, higher SES candidates would instead investigate college level programs that lead to a profession with higher status (Perna & Titus, 2004). In selecting a program that requires a higher human capital investment, and in selecting a profession or program socially held in high status, these students would have the expectation for remuneration following the completion of their degree. Considering that the participants in Boughn’s (2001) study identified as middle class (thus possessing lower human capital than higher SES quintile

population), the lower SES may offer insight into the respondents' conclusions that a nursing salary was good.

2.6.11 Human Capital Influences on the Selection of Nursing as a Career and Pre-licensure Program Choice

When viewed through the context of human capital theory, a student's college choice and course of study is a direct result of the individual's habitus (Perna & Titus, 2004, p. 506). According to Paulsen and St. John (2002), the likelihood of attendance and persistence in college for more recent generations of college students depends on the social class their families. Ergo, one could expect significant differences among students who select non-baccalaureate program over a four-year baccalaureate program. As described by Paulsen and St. John (2002):

The observation that social class structures educational opportunities has been documented for secondary education and vocational education (Grubb & Lazerson, 1981; Trow, 1977), for community and technical college education (Clark, 1960; Krabel, 1977), and for postsecondary education at other types of private and public colleges and universities (Hearn, 1984, 1990; McDonough, 1997, 1998). (p. 195)

Goldrick-Rab (2006), Perna and Titus (2004), and Perna (2005) also have addressed SES with regard to education.

Since the education of nursing curiously exists in three distinct and non-equivalent educational formats, Paulson and St. John's (2002) findings allow for the supposition that there are very distinctive attributes in terms of SES and academic preparedness inherent to students enrolled in each pre-licensure program type (p. 199). Perna and Titus (2004) indicated that "*academic achievement and quality of academic preparation* [emphasis added]" (p. 508) serves

as a gauge for human capital. Hence, a student's family background and economics influence program choice, thus supporting the social reproduction theory as well as the cultural capital theory (Paulsen & St. John, 2002). Cultural capital represents forms of "symbolic wealth that are transmitted from upper and middle class parents to their children to *sustain class status* [emphasis added]from one generation to the next" (McDonough as cited in Paulsen & St. John, 2002, p. 195).

Furthermore, Paulsen and St. John (2002) asserted that the educational attainment of mothers in particular is more predictive of persistence in higher education. Black, Devereux, and Salvanes (2005) supported Paulsen and St. John's assertion, finding that "parents with higher education levels have children with higher education levels" (p. 437). Based upon the research, it can be concluded that hospital-based diploma programs and associate degree programs for schools of nursing attract candidates who have lower SES, non-college-educated parents, and lesser amounts of human capital in terms of educational attainment and academic preparedness.

Therefore, an individual's human capital affects the choice and likelihood of acceptance of pre-licensure program; however, what factors motivate a student to choose one program over another? According to Paulsen and St. John (2002):

Initially, students are assumed to compare the costs and benefits of attendance based on their prematriculation perceptions or expectations about financial factors; a favorable judgment results in enrollment...Subsequently, students compare their actual experiences of costs and benefits with their earlier perceptions and expectations...thereby supporting the view that students engage in a series or sequence of related choices, and at each stage their decisions are affected by financial factors. (p. 194)

Identifying this concept of student choices as they refer to persistence within higher education as a *'financial nexus'*, Paulsen and St. John (2002) identified social class as an important component of student decisions. When considering the differing programs for pre-licensure nursing education, Paulsen and St. John's (2002) claims suggest that programs in and of themselves attract a very different types of student regarding individual financial status.

Kersten, Bakewell, and Meyer (1991) examined the motivating factors in a students' choice of nursing as a career in terms of student perception of intrinsic and extrinsic needs. Additionally, these authors classified the constructs of motivation using the categories proposed by Deci and Ryan (as cited in Kersten et al., 1991): autonomy (i.e., intrinsic goals); control (i.e., extrinsic goals); and impersonal (i.e., self-limiting goals). People possessing an impersonal motivational orientation perceive that they are inadequate for a task, thus choosing to not pursue it (Deci & Ryan as cited in Kersten et al., 1991). If potential candidates are presumed to have the need to "sustain class status from one generation to the next" (McDonough as cited in Paulsen & St. John, 2002, p. 195), it is of interest to note what factors may motivate the selection of nursing as a career. These motivating factors are particularly relevant considering that non-baccalaureate schools of nursing promote a vocational image and potentially attract lesser academically prepared students.

When investigating student considerations relating to pursuing nursing as a career, Kersten et al. (1991) found that about 51% of students identified employment opportunities and that about 33% identified a financial rationale as important influences on their career choice. In Kersten et al.'s (1991) study, employment opportunities included elements of job security, career advancement, career flexibility, mobile profession, and opportunity to change. Financial needs encompassed the possibilities of financial security, money, better lifestyle, and health benefits.

If considering Beattie's (2002) econometrician principle and enrollment patterns in HEIs by SES, Kersten et al.'s rationale would be less congruent for a candidate emanating from a higher SES with an established "better lifestyle". According to Kersten et al. (1991), participants identified nurturance as the most frequently expressed rationale for selecting nursing (62.6%), while an interest in science and diseases was the least frequent rationale (19.4%). Given that nursing is a scientifically based profession, this information may be a proxy value for lesser levels of academic preparedness.

Kersten, et al. (1991) only studied students from associate degree and baccalaureate programs, but in the sample contained nearly double the students in the associate degree group ($N = 498$) as opposed to the baccalaureate group ($N = 254$). Due to Kersten et al.'s (1991) methodology, the distribution of item responses in regards to associate and baccalaureate candidates remains unknown. However, the large ratio of associate degree nurses to baccalaureate degree nurses as noted in the 2004 NSSRN (U.S. Department of Health and Human Services, 2004) permits the assumption that Kersten et al.'s results would be more representative of associate degree nurses. It would be useful to have a distributive understanding of this information that relates the concept of human and social capital to the perceptions of finances and employment delineated by SES and academic preparedness. Additionally, it would also be of value to have had a comparison of responses that included students from diploma schools of nursing.

Based upon the importance of actual and indirect cost components (Paulsen & St. John, 2002), one can postulate that students who are choosing hospital-based diploma programs or programs in community colleges have a far differing socioeconomic situation and habitus. While researching persistence as it relates to college choice, Paulsen and St. John (2002) found

that college students make numerous decisions regarding cost and aid before and during the enrollment process in college, identifying that background and personal characteristics as well as prematricular expectations are pivotal influences on these decisions. Existing studies addressing nursing education and disciplinary actions have cited better outcomes for patients based on baccalaureate preparation (Aiken et al., 2003; Torangeau et al., 2006) and disproportionately fewer disciplinary actions for baccalaureate-prepared nurses (Delgado, 2002). The research has also supported conclusions that the cultures and values of baccalaureate students created a more honorable and righteous influence for the manner in which they frame and enact professional nursing practice (Goode et al., 2001; Ingersoll et al., 2002; Rambur et al. (2005) and personal health choices (Jenkins & Ahijevych, 2003; Patkar et al., 2003; Rausch et al., 1987).

2.7 SUMMARY

“The existence of three different programs to train registered nurses is largely a *historical accident* [emphasis added] brought about in part by the absence of a unified political lobby for nurses” (Mennemeyer & Gaumer, 1983, p. 33). Non-equivalent amounts of human capital acquisition for students enrolled in these programs predisposes the nursing profession to attracting candidates who likely possess differing amounts of academic preparedness. More importantly, differences in the habitus, beliefs, attitudes, and values of candidates selecting non-baccalaureate pre-licensure education may be of more critical importance. In examining these elements, differences in attitudes, beliefs, skills, and abilities of diploma-, associate-, and baccalaureate-prepared nurses may be explained.

This literature review has provided the impetus for further investigation into relationship between human capital and admission requirements of pre-licensure programming. It has been shown that academic preparedness is a proxy for habitus (Habley & McClanahan, 2004, p. 6) and that admissions criteria are proxy measures for academic preparedness. Relying on this premise, the following research will assess academic preparedness in terms of human capital assessment indicators (HCAIs). In doing so, the research has promise to establish a baseline by which to explain the known differences in nurses by pre-licensure program type. Thus, it is important to identify the measures of HCAIs used by pre-licensure programs of nursing education and to determine the levels of selectivity of these programs.

3.0 METHODS

As indicated in the literature review, graduates from the three pre-licensure program types for nursing education are fundamentally different from each other. Additionally, the information gleaned from the literature review demonstrates that academic preparedness of students has been shown to vary by institutional type (i.e., between students of post-secondary occupational or vocational schools, associate degree colleges, and four-year colleges). In part, these differences result from variances in human, social, and cultural capital, which together make up the habitus of pre-licensure nursing applicants. Effective measures of academic preparedness are critical to students' ability to succeed in post-secondary education and serve as the means by which institutions attract and retain well-qualified students. The importance of these measures (e.g., the SAT) is summarized in the tables included in Appendix H.

Programs of study for specific disciplines may necessitate and thus require admissions criteria beyond those required for a general college admissions. Nursing constitutes a specific science-based discipline as affirmed by the Commonwealth of Pennsylvania's schools of nursing curricular guidelines (State Board of Nursing, 2010). Geiser and Studley (2002) determined that "among students intending to major in the *physical sciences*, mathematics, and engineering, which are among the *most competitive academic disciplines* at UC [University of California]", it was found that SAT II subject tests, "were consistently the stronger predictor of student performance at UC than the SAT" (pp. 8-9). The discipline of nursing draws upon many categories of the science fields including the physical sciences (e.g., chemistry and biology) and

behavioral sciences (e.g., psychology). Additionally, the PA Code section § 21.81 *General curriculum requirements* “(c) [Addresses the need for] Physical and biological *sciences* [to]include content from the areas of anatomy and physiology, chemistry, microbiology, physics and nutrition, which may be integrated, combined or presented as a separate course” (State Board of Nursing, 2010). It follows, therefore, that because nursing *is a science-based discipline*, all pre-licensure nursing institutions would be highly selective and competitive as indicated by their admissions criteria and when compared to other science-based disciplines (Geiser & Studley, 2002).

However, human capital theory counters such a presumption, specifically for non-baccalaureate programs. Based on studies of academic preparedness, SES, habitus, and selectivity criteria for HEIs, human capital theory suggests that non-baccalaureate programs cannot command the same selective admissions criteria as baccalaureate programs that are situated in four-year colleges and universities. Via a systematic review of Pennsylvania schools of nursing ($N = 81$), the author intends to record the academic admission criteria for each school. As the institutional first-time NCLEX-RN pass rate was raised to 80% in 2010, the author presumed that requirements for academic preparedness may have been increased by the 2011-2012 academic year; hence, data was collected in 2011. This research study investigates the admissions criteria and selectivity used by pre-licensure programs of nursing. The overarching questions are, what are the admissions criteria used by pre-licensure programs of nursing, and what are the comparative levels of selectivity therein?

3.1 PURPOSE

The purpose of this study is to examine the variation in selectivity levels and academic admission criteria used by pre-licensure schools of nursing. These variables represent human capital assessment indicators (HCAI's); hence, this study will also examine the similarities and differences in the use of these HCAIs by program type and institutional control. The principal intention of this study is to determine if pre-licensure programmatic admissions criteria is of high, moderate, or low levels of selectivity.

Given the known differences about registered nurses with regard to pre-licensure program type and subsequent practice, it is important to determine if academic preparedness and institutional selectivity differs as a proxy measure that may assist in explaining the differences of graduates as related to educational preparation. The usefulness of such information may provide researchers with a chronicle of data, thus aiding them in understanding “the historical roots of specific issues” (Bowen, 2009, pp. 29-30). This analysis of admissions criteria will be informed by an understanding of how historical influences of the community college movement, government policies on higher education, and societal trends have contributed to the continued existence of three non-equivalent programs for pre-licensure nursing education and the admissions requirements associated with each.

3.2 RESEARCH DESIGN

This work is an exploratory, descriptive study that employed the use document analysis as the method of analysis. This document analysis will include the collection of admissions criteria (HCAIs) stated on the schools' websites and/or their internet-available admissions catalog for all of the pre-licensure programs in the Commonwealth of Pennsylvania. The exploration of such measures contained in documentary materials, such admissions catalogs and webpages, creates "a case of text providing context" (Bowen, 2009, p. 29). As Bowen (2009) stated that is it important to understand the selected audience, the transparency of the publicly available website material is critical, as it allows a view of the material similarly to the intended audience: prospective students. The next section explains more about website content, its influence on the targeted audience, and the use of document analysis as an effective tool by which to research the content of such documents.

3.3 RESEARCH GENRE: DOCUMENT ANALYSIS

Organizations produce volumes of written works as a function of their existence. Examples of written organizational documents include financial accounts, minutes of meetings, and logs of events for historical references. One of the purposes of such works may be for internal communications to organizational members. Works produced for external communication may meet the purpose of reporting to stakeholders or accrediting bodies. External documents are important for organizations in that "they may be among the methods whereby organizations

publicize themselves to clients” (Atkinson & Coffey, 1998, p. 46). Hence, the analysis of these documents must take into account the intended audience or “consumer” of the information (Bowen, 2009). Admission catalogues serve as part of the process of external communication in HEIs, as they strive simultaneously to inform and attract potential students. The existence of such documents provides pre-created sources of rich data from which an ethnographer may gather information to study (Bowen, 2009).

“Document analysis...is a process of evaluating documents in such a way that empirical knowledge is produced and understanding is developed” (Bowen, 2009, p. 34). “Organisational [sic] and institutional documents have been a staple in qualitative research for many years” (Bowen, 2009, p. 27). While institutional documents were most likely reviewed to ensure adherence to their intended purposes, the analytic lens of a researcher may identify specific patterns and types of information within the documents or between other, similar documents. “Qualitative data begin as raw, descriptive information about programmes [sic]” (Labuschagne, 2003, p. 101). The researcher must screen potential documents for both the intended and anticipated information, in this case admissions criteria. Documents informing and attracting potential student candidates will be the focus of this study.

Bowen (2009) explained that the researcher should be cognizant of the intended audience. Any document, such as those that contain admissions criteria for prospective students, creates a reality and a representation that is visible to those who are the consumers of the document (Atkinson & Coffey, 1998). Further rationale for gathering information from that which is available to the prospective candidates was passed upon the “halo effect” (DesJardins et al., 1999). The halo effect refers to the status held by institutions with favorable reputations that in turn attracts favorable students (DesJardins et al., 1999, p. 129). For instance, rigorous

admission criteria will be more likely to attract academically prepared student candidates, a magnet-type effect influenced by the halo effect surrounding an institution's illustrious name and reputation. Conversely, as the favorable reputation attracts auspicious students, it may well deter students who understand that their academic preparedness does not align with the high criteria. Thus, the rigorous admissions criteria exert a bidirectional gatekeeper effect: it allows entry for academically qualified students while it deters less motivated and academically unprepared candidates from applying.

Moreover, minimal institutional academic requirements may dissuade highly motivated and academically successful candidates from applying, as they are incongruent with such candidates' high academic preparedness. Decisions against applying to a given institution may be based upon an individual's habitus. Thus, the analysis of documents containing admissions criteria is important in determining the external representation of institutional selectivity, requirements for potential applicant's academic preparedness, and in this case, nursing programmatic selectivity.

3.3.1 Limitations of Document Analysis

Some of the limitations of using document analysis are that all desired documents, or information there in, may not be accessible. Also, Atkinson & Coffey (1997) noted the importance of documents and to recognize "their existence as social facts", but warned of the limitations of documents in that researchers cannot "learn through records alone how an organization actually operates" (p. 47). An additional problem is that existing documents may lack in the breadth and depth needed by the researcher, thus confounding efforts of a full analysis (Bowen, 2009).

While printed documents maintain a certain sense of stability over time, the availability of internet documents provides a less stable analysis medium, as websites and internet documents can be revised and updated instantaneously. Thus, to ensure stability of “documents”, such documents will need to be printed or preserved in electronic form so as to have a stable point of reference. Additionally, if web-based documents are available in PDF files, it is important that such files be downloaded in order to capture information from the period of time in which the data was being analyzed.

3.3.2 Linguistic Registers and Intended Audience

Atkinson and Coffey (1997) implored that researchers must be attuned to “distinctive uses of linguistic *registers*...the specialized use of language associated with a particular domain” (p. 49). Admissions catalogs and institutional websites including admissions data will use rhetoric and terminology intended for the consumer. Hence, these websites should use information pertinent for potential students seeking admission to post-secondary institutions. Therefore, the notations of items such as minimum grade point average or scores of standardized tests are linguistic registers that are usually familiar to potential college attendees. Additionally, the information listed by an institution creates “some implicit idea of order and importance” (Atkinson & Coffey, 1997, p. 53). In a sense, there is a persuasive element to university web pages (Atkinson & Coffey, 1997). The use of the information presented in schools of nursing websites is critical to this study, since the information provides necessary information for potential candidates to understand if they meet the institution’s admission criteria. Bowen (2009) emphasized researchers to not lose sight of the “original purpose of the document—the reason it was produced—and the target audience” (p. 33).

3.3.3 Authorship

Atkinson and Coffey (1997) explained that authorship of a document is an important component of which the researcher should be aware, and state that “the absence of an implied personal author is one rhetorical device that is available for the construction of ‘authoritative’, ‘official’, or ‘factual’ accounts” (p. 59). Thus, admissions catalogs and websites presumably reflect the authority of the educational institution. These documents become a tool whereby prospective applicants determine if they meet the necessary admissions requirements. In summary, it is important for the researcher to determine a document’s authenticity, its intended audience, and identifiable linguistic registers by which the target audience may make informed decisions. In this particular research study, the transparency of the level of academic preparedness required by a pre-licensure program of nursing education is of great importance.

3.4 RESEARCH QUESTIONS

This research will be guided by the following questions:

1. What are the measures utilized to assess academic preparedness, known for the purposes of this study as human capital assessment indicators (HCAIs), utilized by pre-licensure schools of nursing?
2. What is the level of institutional selectivity?
3. Are there differences in admissions criteria by program type?
4. Are there differences in admissions criteria by institutional control?
5. Are there trends and patterns among the findings?

3.5 SAMPLE AND SETTING

In this study, the population is pre-licensure schools of nursing, and the sample of convenience will consist of 81 schools of nursing situated in the Commonwealth of Pennsylvania in 2011. The researcher chose Pennsylvania because it had a relatively high number of all types of programs. Specifically, Pennsylvania housed a high number of HBDPL programs, which exist in relatively few numbers in most states. For example, as of July, 2012, New York lists only one diploma school of nursing, New Jersey lists 10, and Ohio lists 13 (OCPA, 2012). Of the 81 pre-licensure programs in Pennsylvania in 2011, 34 were baccalaureate, 27 were AD programs, and 20 were HBDPL programs, thereby providing a sample having similar numbers of program types. All information about the numbers of program types are available through the Association of Diploma Schools of Professional Nursing.

3.6 MEASURES INDICATING HUMAN CAPITAL

An extensive review of the literature prompted the selection of measures best suited for identifying academic preparedness as an indicator for human capital. Such measures, for the purpose of this study, are known as human capital assessment indicators (HCAIs). For the purposes of this study, the author chose measures focusing on three different types of HCAIs:

- Measures indicating human capital;
- Measures of human capital/academic preparedness; and
- Measures human capital/academic preparedness specific to schools of nursing.

It was important that these HCAs be transparent to the public, based on the “halo effect” (DesJardins et al, 1999), whether they are accessible via nursing schools’ websites or through documents such as web-based student handbooks. Additionally, the requirement for high scores in either the SAT or the ACT provide such data to a potential applicant, as this data is factored into the overall ranking of institutions:

Much of the value of test scores is realized *before the college admission officer* [emphasis added] ever receives the scores. They *provide useful information to students and counselors and others advising students* that is useful in the selection of colleges not only where the students *application is apt to be competitive* but where he or she is *prepared to meet the academic demands of the institutions*[emphasis added]” (Linn, 1990, p. 308).

An assessment of these pre-admission HCAs may identify differences in academic human capital. In turn, these differences in academic human capital may manifest in the critical differences in patient outcomes as they relate to nursing care, as well as other professional outcomes for the nursing discipline.

Furthermore, it is wise for the researcher to recognize the importance of the intended audience of these admissions document, as official documents create a “social reality” to potential applicants of eligibility (Atkinson & Coffey, 1997, p. 60). As previously noted, persons in the public sector who are in the process of selecting an institution of higher education and those in the scholarly community “make inferences about the ‘quality’ of the undergraduate education one receives” (Pascarella et al., 2006, p. 251). Further resources, such as *Barron’s Profiles of American Colleges* (Barron’s Educational Services, 2010), rankings, or general knowledge, influence perceptions of intuitional selectively. Hence, these resources may be influences for a person’s program choice, affected by “his or her stock of cultural knowledge, a

knowledge (or ignorance) of similar texts, and his or her unique biography” (Atkinson & Coffey, 1997, p. 60). Cultural knowledge is a component of habitus (Perna & Titus, 2004) that affects the individual’s aspirations and beliefs about their own level of academic preparedness. Thus, information and linguistic registers used in a document containing institutional admissions criteria will assist a prospective applicant to determine if “he or she is *prepared to meet the academic demands of the institutions* [emphasis added]” (Linn, 1990, p. 308).

3.6.1 General Admissions Criteria

In this section, measures which indicate human capital for the purposes of general college level admissions criteria will be discussed. A survey study assessing numerous variables as they relate to college admissions, which yielded 1,263 responses (65%) from four year, non-proprietary institutions was performed by the National Association for College Admission Counseling (Clinedinst, Hurley, & Hawkins, 2011). As shown in Table 3.1, grades in college preparatory classes, such as advanced placement (AP) or international baccalaureate (IB), were unanimously identified as the most relevant criterion variable (Clinedinst et al., 2011). The number of 88.7% of HEIs indicated that admission test scores (e.g., the SAT and ACT) were of considerable or moderate importance (Clinedinst et al., 2011). Similarly, 88.3% of HEIs rated HSGPA at the considerable or moderate level of importance. However, overall, HEIs indicated that admission test scores were more important than HSGPAs, 59.3% and 46.2%, respectively.

Table 3.1 Importance of Different HCAIs in College Admissions Processes

	Considerable Importance	Moderate Importance	Limited Importance	No Importance
Grades in College Preparatory Courses	83.4%	12.3%	2.7%	1.6%
Admission Test Scores (SAT, ACT)	59.3%	29.4%	7.0%	4.3%
Grades in All Courses (HSGPA)	46.2%	42.1%	10.2%	1.6%
Subject Test Scores (AP/IB)	9.6%	32.4%	32.6%	25.3%
SAT II Scores	5.3%	11.8%	24.9%	58.0%

Note. Table reproduced from Clinedinst, Hurley, and Hawkins (2011). Data represents percentage of colleges attributing different levels of importance to factors in the 2010 admissions decision.

Because HEIs placed so much value in SAT scores, ACT scores, and HSGPA, the author included these elements as HCAIs in this study. Additionally, since Linn (1990) noted some of the more selective colleges were requiring SAT subject tests (SAT II) as early as 1990, if either the pre-licensure program or the parent institution requires or suggests SAT II scores in admissions requirement, it will be noted as highly competitive and highly selective. Since some admissions criteria included high school rank (HSR), it too will be included as an HCAI.

3.6.2 Admissions Examinations Specific to Nursing Programs

Some schools of nursing utilize nursing-specific entrance exams, such as the Diagnostic Entrance Test, (DET), COMPASS, Center for Nursing Education and Testing Inc. (C-NET), The National League for Nursing Pre-Admission Examination (NLN-PAX-RN), The Registered Nurse Entrance Exam (RNEE), and the Test of Essential Academic Skills (TEAS). (Please see Appendix I for more information on each of these exams.) In this study, these nursing-specific entrance examines are included as HCAIs. However, nursing-specific entrance exams are reported differently than general college admissions exams (e.g., GRE, SAT) and are often also

left to individual institutional interpretation; hence, a comparison of competitiveness and selectivity cannot be established.

However, institutions in Barron's non-competitive category "generally only require evidence of graduation from an accredited high school (although they *may require completion of a certain number of high school units* [emphasis added]). Some require that *entrance examinations* [emphasis added] be taken for placement purposes only, or only by graduates of unaccredited high schools" (Barron's Educational Series, 2010, p. 259). Thus, nursing-specific entrance examinations will be categorized as non-competitive measures of academic preparedness, indicating lesser institutional selectivity when compared to the traditional, standardized competitive measures of college-level academic preparedness such as the SAT or ACT. The author recorded the frequency at which institutions require nursing-specific entrance exams.

3.6.3 The Relationship of Institutional Control to the Admissions Process

Tolbert (1985) defined institutional control as the organizational culture and administrative structure that is determined by institutional missions and source of resources. For example, HEIs may be private for profit, public, private not-for-profit, as well as religiously affiliated private not-for-profit. In regards to SES, research has indicated that institutional control among HEIs is relevance to human capital influences for determining enrollment choices by the highest quartile of SES candidates as compared with the lower quartile of SES (Perna & Titus, 2004). Institutional control has been shown to effect admissions criteria in a variety of ways. For example, "private colleges assigned greater importance than public colleges to many factors

other than the top four, including the ...interview, counselor and teacher recommendations...[and] SAT scores (Clinedinst, et al., 2011, p. 24).

In addition to academic preparedness, private colleges may wish to establish and identify positive character traits (e.g., diligence and motivation) via letters of reference or candidate interviews. Also, “the average chance of persistence at an institution increases by 7% points when institutional selectivity increases by one standard deviation” (Titus, 2004, p. 690). Less than one-third of students admitted to public four-year colleges with open admissions policies graduated in six years, while private institutions had nearly a two-thirds completion rate in six years (U.S. Department of Education, 2013). Institutional control is a relevant component as it relates to admissions criteria, and subsequently, rates of completion. A private institution, such as HBDPLs or AD programs housed within private HEIs, may be theorized to have more control over the acceptance of potential candidates in terms of academic preparation and thus, theoretically, indirect control over a candidate’s habitus.

Pennsylvania pre-licensure nursing programs provides a sample situated in a varying range of institutional control. When examining baccalaureate programs, it is interesting to note that 2.4 times as many nursing education programs are housed in private HEIs (both religious and non-religious) as compared to public HEIs. Also, for baccalaureate programs, there are equal numbers of private religious programs as there are private and public institutions combined. Additionally, five of the BSN programs and two of the AD programs are in the Pennsylvania State System of Higher Education (PASHE).

In regards to the 27 Pennsylvania AD nursing preparation programs, 78% are housed in public institutions. Of the AD programs in private institutions, twice as many are in religious institutions as are in public. It is also interesting to note that 30% of the AD programs are

housed within four-year parent colleges or at branch campuses of four-year colleges: four are housed in private religious institutions; two are housed in private, non-religious programs; and two are housed in public institutions. Branch campuses are considered to be a separate entity and are thus “counted separately if reported separately” in the Integrated Postsecondary Education Data System (IPEDS) (U.S. Department of Education, 2001). Table 3.2 displays the distribution of programs by institutional control.

Table 3.2 Distribution of Nursing Programs by Institutional Control

	Public	Private	Private Religious	Four-Year Parent Institution
Baccalaureate	10	7	17	-
Associate Degree	21	2	4	8
Hospital-based Diploma	-	18	2	-

3.7 HCAIS: MEASURES OF ACADEMIC PREPAREDNESS AT THE COLLEGE LEVEL

Standardized tests and HSGPA represent two of many items considered by HEIs in the admissions process. According to Clinedinst et al. (2011):

The top factors in the admission decision were (in order.): grades in college preparatory courses, strength of curriculum [high school], standardized admission test scores, and overall high school grade point average Among the next most important factors were the essay, student’s demonstrated interest, class rank, counselor and teacher recommendations, and extracurricular activities. (p. 6)

“Despite criticisms of standardized tests, these multiple choice instruments are highly effective and cost efficient [and]...provide a means of obtaining relatively broad content coverage and good reliability in a brief period of time” (Linn, 1990, p. 298). However, admission “test scores provide a common yardstick” (Linn, 1990, p. 307), perhaps offering a means to assess an individual with a lower GPA or alternately adjust for variances in high school rigor (Linn, 1990). Please see Appendix H for additional information about individual measures and key research findings regarding these measures.

In their study of 77,893 incoming freshman in 1996, Geiser and Studley (2002) assessed the relationships between HSGPA, SAT I scores, SAT II scores, and college students’ academic success over the four year period. Additionally, Geiser and Studley (2002) investigated the correlation of these HCAIs to academic rigor of intended major. “HSGPA was a better predictor of student performance than the SAT I or the SAT II for the majors of general or undeclared, social sciences and the humanities, and the *biological sciences* [emphasis added]. Furthermore, the correlation of these HCAIs was determined for the academic performance index (API), an assessment criterion of academic preparedness for high school performance utilized by the California Department of Education” (Geiser & Studley, 2002, p. 8). Given the large sample size in conjunction with the significance of the findings, Geiser and Studley’s work constituted the benchmark for the validity and reliability of the HCAIs of HSGPA, the SAT (known in the study as SAT I), and THE SAT II. The results are listed in Appendix H.

3.7.1 High School Rank

High school rank (HSR) generally corresponds directly to HSGPA, but it may also be correlated to the difficulty of classes taken, such as college preparatory or honors classes. (College Board,

2012). Espenshade, Hale, and Chung (2005) noted that high school rank is strongly related to the specific academic environment of the school. Thus, a student with a competitive HSGPA may have a lower rank in a school with many high achieving students (Espenshade et al., 2005). Conversely, a student in a school with limited numbers of high achieving students may attain a disproportionately higher high school rank (Espenshade et al., 2005). This situation makes the use of HSR as a measure of academic preparedness problematic. Therefore, many schools no longer report class rank because of the variances that affect it; however, potential applicants may still perceive a relative importance of HSR. This perception may be influenced by publication such as the Barron's Measure of Selectivity (Barron's Educational Services, 2010) as it includes rank within its categories for institutions that still use it as a determining factor in admissions criteria. Thus, HSR will be included as an HCAI in this study.

3.7.2 High School Grade Point Average

Through rigorous analysis, Geiser and Studley (2002) found that the high school grade point average (HSGPA) was the most predictive indicated of future college success. Linn (1990) also discussed the high school record, stating that the high school record is “typically the single best predictor” (p. 304) of freshman GPA. Furthermore, Noble and Sawyer (2002) found that a student who did well in high school would do well in college, irrespective of standardized test scores, thus indicating the importance of the use of HSGPA in the admission selection process. Similar studies support the importance of HSGPA (Robbins et al., 2004; Robbins et al., 2006). Specifically, Robbins et al. (2006) determined that HSGPA was an important predictor of first-semester college GPA and proficient marks (i.e., a B letter grade or higher) in college-level English composition in both two-year and four-year institutions.

Therefore, HSGPA may be a better overall indicator of student success in college; thus, HSGPA may well be a proxy for academic motivation, study habits, commitment, educational goals, and diligence, all of which are indicators of an individual's human capital, irrespective of institutional academic rigor. "Despite problems with grading reliability and disciplinary and institutional grading differences, it [HSGPA] is still the most widespread performance measure" (Robbins, et al., 2004, p. 262).

3.7.3 SAT

Also known as the SAT I, the SAT is a long-standing measure of academic preparedness for college level admissions. Originally an acronym for Scholastic Aptitude Test, the general aptitude test is now only known as the SAT. The SAT is split into two portions (i.e., math and English), each worth total of 800 points, for an overall possible score of 1600. Reliability coefficients, as reported by the College Board (2011e), are 0.91-0.92 and 0.92-0.93 for the critical reading and mathematics sections, respectively.

Numerous studies validate the correlation between SAT scores and high school performance and college graduation rates. Camara and Echternacht (2000) reported that college graduation rates even for candidates with an "A" average (as indicated by HSGPA) correlated strongly to SAT math and verbal scores. Students scoring less than a combined score of 700 (total score 1600) demonstrated a bleak 28% rate for graduation from a four-year college, while a combined score between 850 to 999 nearly doubled the rate of success to 55% (Camara & Echternacht, 2000). Students with a combined score of 1300 touted a graduation rate of 80% along with the HSGPA indicating an "A" average (Camara & Echternacht, 2000). Even when students had a HSGPA indicating a "B" or "C+", graduation rates similarly and progressively

increased commensurately with increases in SAT score; however, graduation success was markedly lower than students with an “A” HSGPA average. For students with a “C+” high school average, there were no SAT scores above 1300 for a HSGPA of C+, perhaps indicating that there is no such correlation of lower HSGPAs and high SAT scores. Additionally, Camara and Echternacht (2002) noted that mean SAT scores for verbal or math for “applicants to highly competitive colleges” (p. 2) was 650. The national average for mean score of high school seniors taking the SAT is 500.

In contrast to these highly selective criteria, the National Collegiate Athletic Association (NCAA) holds less rigorous standards for college freshman admissions. For Division I colleges, which have large athletic programs that are well known in the arena of college athletics, SAT admission requirements are gauged on a sliding scale, rather than specific indicators of cut-off scores. On this sliding scale, admission requirements allow for a combined SAT score of 1010, the highest score that is listed, with a HSGPA of 2.0. A total SAT score of 800 is acceptable per NCAA guidelines, provided that a candidate have a HSGPA of 3.55 or greater. In comparison, Division II requires a combined SAT score of 820, eliminating the sliding scale. Division II’s guidelines indicate that a math or verbal score of 410 would be acceptable; however, the guidelines do not specifically state this possibility (NCAA Quick Reference Sheet, n.d). As a reminder, SAT scores of less than 500 fall into Barron’s “less competitive” category (Barron’s Educational Services, 2010).

Willingham (2009, p. 1) indicates that such reduced standards for admission to elite colleges with a need for student athletes are known as “special admits”, thus resulting in a “disparity between the academic preparedness of these two student populations (students and student-athletes)”. Because of the lack of academic preparedness of many student athletes,

academic support during these students' college career is often a necessity. As indicated in the academic literature, college success increases commensurate with higher HCAIs. As an additional point of reference, the College Board (2011) reported that a combined SAT score of 820 falls into the eighteenth percentile range for the nation. In fact, there is a marked decline in percentile rank at a combined score of 1000 or less (The College Board, 2011) . (Please see Appendix J for a full list combined SAT scores and corresponding percentile ranks.) Hence, the correlation between academic success, college graduation rates, and SAT scores justifies the use of these scores as an HCAI within this study. The fact that colleges that are more competitive require higher SAT scores for admission further establishes these scores as strong HCAIs. Because markedly less competitive standards exist for incoming student athletes, NCAA admission standards will be used as a comparison standard for non-competitive, minimum-level admissions entry criteria.

3.7.4 ACT

Similar to the SAT I, the ACT “test assesses high school students' general educational development and their ability to complete college-level work” (ACT Home, n. d.) In addition to the core areas of English, mathematics, reading, and science, the ACT includes an optional writing test. The ACT is adept at measuring “educational achievement in college-preparatory courses” (Noble & Sawyer, 2002, p. 1). The median ACT composite score of 21, which falls into the mid fifty-percentile range on the individual test components (ACT, 2013a), correlates strongly to a college GPA of a 2.0. However, this same score of 21 demonstrates progressively decreasing probability to predict increasingly higher GPAs.

3.7.5 SAT II Subject Tests

The SAT II achievement tests are individual, subject-based tests designed to measure mastery and accumulative knowledge in specific content, differentiating it from general aptitude tests such as the ACT or the SAT I tests (Linn, 1990). The Graduate Record Examination (GRE) and the Medical College Admission Test (MCAT) are other examples of achievement tests “intended to measure achievement in specific subject matter corresponding to high school or college level work” (Linn, 1990, p. 299). As early as 1990, Linn recognized that some of the more selective colleges were requiring SAT subject tests (p. 299). Geiser and Studley (2002) studied the importance of the SAT II in its ability to predict success at the University of California as measured by GPA. Geiser and Studley (2002) found that of the 77,893 incoming freshman, the “SAT II scores were the single best predictor of the UCGPA in two of the four years studied (1998 and 1999), and also the single best predictor for the pooled, four-year data” (p. 5).

3.7.6 The Writing Components of Standardized College Admissions Tests

An optional writing component exists for both the SAT and the ACT. The ACT writing component provides documentation of the student’s capacity to “maintain a focus on the topic throughout the essay, organize ideas in a logical way, [and] use language clearly and effectively according to the rules of standard written English” (ACT, 2013b, p. 1). Similar in function to the ACT writing component, the SAT writing test “assesses the students’ ability to *do the kind of writing required in most college courses* [emphasis added]—writing that emphasizes precise use of language, logical presentation of ideas, development of a point of view, and clarity of expression” (Kobrin & Kimmel, 2006, p. 2). In addition to a student’s reading comprehension abilities, Newton, Smith, Moore, and Magnan (2007) found that writing ability was essential “for successful completion of a baccalaureate nursing program” (p. 147).

3.8 HCAIS: MEASURES OF ACADEMIC PREPAREDNESS SPECIFIC TO SCHOOLS OF NURSING

As previously stated, schools of nursing, specifically the HBDPL and associate degree programs, attract a non-traditional population with many of the candidates lacking any post-high school education. These schools often rely on a more general pre-admission test. A review of the literature revealed the existence of numerous pre-admission nursing aptitudes tests, unlike the single test for pharmacy school admissions (i.e., the Pharmacy College Admission Test or PCAT). Thus, while there is a consistent admissions test preferred for admission requirements for pharmacy schools, those making admissions decisions for pre-licensure nursing education

admissions are not afforded this consistency. Tables in Appendix I display research regarding each of the pre-licensure nursing-specific admissions tests.

Furthermore, scholars have focused on retention and best practices for ensuring first-attempt NCLEX-RN success within pre-licensure nursing programs. Newton, Smith, and Moore (2007) examined admission policies that promote student success within a nursing program, noting that during a period of declining enrollment of the 1990s, “many baccalaureate-level schools of nursing revised their admission requirements to facilitate entry of as many applicants as possible into the nursing major” (p. 439). Newton, Smith, and Moore (2007) stated that most baccalaureate-level programs used a ranking system to aid in selecting the best applicants in a given pool. However, during the 1990s, the use of a rolling admissions process began whereby candidates were admitted after meeting minimum requirements, rather than delaying admission until students could be ranked within a pool (Newton et al. (2007). This practice was implemented to *ensure* necessary students for program viability. “Supply and demand in the health care industry have always influenced admission and progression policies” in schools of nursing (Seldomridge & DiBartolo, 2004, p. 366).

Nursing-specific admission criteria vary not only by the individual program but also by the college or university in which they are housed. A review of the literature did not reveal the use of standardized measures for admissions criteria in pre-licensure programs. In many baccalaureate nursing programs, candidates are admitted directly into the program as freshman. Some baccalaureate nursing programs, however, are considered upper-level majors, with admission standards dependent upon pre-nursing college GPA. However, this standard of admission is problematic in that students may complete required coursework in classes such as anatomy and physiology at a community college where standards may be less rigorous.

Additional concerns exist around the reading comprehension and writing ability of nursing applicants:

most pre-nursing courses do not evaluate reading comprehension or writing ability—two qualities that are necessary for successful completion of a baccalaureate nursing program. As a result, many baccalaureate nursing programs have moved toward requiring standardized nursing aptitude tests. (Newton, Smith, Moore, & Magnan, 2007, p. 145)

In a similar study, Newton, Smith, and Moore (2007) examined two cohorts of sophomore nursing students, noting a discrepancy in admission rubrics. While these rubrics placed importance on pre-nursing courses, the rubrics did not weight “the academic rigor of the courses themselves or the institution where the classes were taken” (Newton, Smith, & Moore, 2007, p. 442).

Multiple other studies exist about the measures of academic preparedness used by pre-licensure nursing programs. Newton, Smith, Moore, and Magnan (2007) found that GPA was an important measure of academic preparedness for pre-licensure programs, but the use of the TEAS test increased the probability of academic success within the program. Newton, Smith and Moore (2007) found the TEAS to be the most predictive measure of academic preparedness in terms of the first semester nursing GPA; yet, overall success in the program was reflective of the preadmission GPA. Byrd, Garze, and Nieswiadomy (1999) and Seldomridge and DiBartolo (2004) further supported the importance of GPA as a measure of programmatic success. Seldomridge and DiBartolo (2004) endorsed the use of the National League for Nursing Comprehensive Achievement Tests for Baccalaureate Students (NLNCATBS) and the student’s pathophysiology grade. Similarly, Landry, Davis, Alameida, Prive and Renwanz-Boyle (2010) found a positive association between academic success and the grade earned in pathophysiology

courses. Symes, Tart, and Travis (2005) indicated the CNET test as a useful measure of academic success, along with GPA. However, Gallagher, Bomba, and Crane (2001) asserted that the RNEE was more predictive of success than the NET in the particular pre-licensure program they studied.

The preceding discussion of the different measures of HCAIs creates a foundation for comparing the use of such measures by pre licensure programs of nursing education in an attempt to determine selectivity as it relates to an institution's admissions requirements. The importance of such information may provide a basis by which differences in the graduates of the three distinct programs of pre-licensure education exhibit *after* graduation. Additionally, levels of institutional selectivity and academic preparedness of potential candidates is important to establish a baseline understanding of academic standards for pre-licensure programs of nursing education. In the following section, the procedures for data collection will be discussed.

3.9 PROCEDURES FOR DATA COLLECTION

All data incorporated in this study exists in the public domain, and as there are no human subjects involved in this procedure, institutional review board approval was not necessary. The researcher obtained data from the websites and online program catalogs for 81 Pennsylvania pre-licensure nursing programs. All webpages were printed for stability and digital versions of admission catalogs were saved electronically.

First, the researcher created spreadsheets in Microsoft Excel for each of the pre-licensure nursing program types: HBDPL, AD, and BSN. For each spreadsheet, the researcher created the following categories of headings for assessment of academic preparedness:

- SAT
- SAT writing
- SAT Subject Tests (SAT II)
- ACT
- HSGPA
- HSR
- Pre-admission course-specific GPA
- C-NET
- COMPASS
- DET
- NLN
- PSB-RN
- RNEE
- TEAS

The next step in this study involved accessing the websites of the 81 Pennsylvania schools of nursing. When accessing the websites, the researcher noted the following information: the name of the school, the type of pre-licensure program, and the type of institutional control. School names as well as type of institutional control (public, private, and private-religious) were placed on the appropriate spreadsheets designated for HBDPL, AD, and BSN programs. The following abbreviations were used when identifying institutional control:

- Public – PB,
- Private – PV, and
- Private-religious – PR.

Following this initial data entry, the researcher entered all available admissions criteria regarding the stated measures of HCAI's (as identified in the previous 14-item bulleted list). Relying on Barnes and Buring (2012) guidelines and Barron's Measure of Selectivity (Barron's Educational Services, 2010) to create selectivity gradings, the researcher then categorized the institution's admission requirements for HSGPA as indicated in Table 3.3.

Table 3.3 HSGPA Letter Grade and Corresponding Numeric Value

HSGPA Letter Grade	HSGPA Numeric Value	Competitiveness Category
A+	4.0, 3.9, 3.8	Higher Selectivity
A-	3.7, 3.6, 3.5, 3.4	Higher Selectivity
B+	3.3, 3.2, 3.1	Average Selectivity
B	3.0, 2.9, 2.8	Average Selectivity
B-	2.7, 2.6, 2.5, 2.4	Average Selectivity
C+	2.3, 2.2, 2.1	Average Selectivity
C	2.0, 1.9, 1.8	Lesser Selectivity
C-	1.7, 1.6, 1.5, 1.4	Lesser Selectivity
D+	1.3, 1.2, 1.1	Lesser Selectivity
D	1.0	Lesser Selectivity

Note. Categories constructed using Barnes and Buring's (2012) Barron's Educational Services (2010) guidelines.

Following the categorization of HSGPA, the researcher progressed to the categorization of high school rank (HSR), again relying on Barron’s Measure of Selectivity (Barron’s Educational Services, 2010). This selectivity designations for HSR are display in Table 3.4.

Table 3.4 High School Rank (HSR) Categories

High School Rank	Selectivity Level
Top 10 %	Higher Selectivity
Top 11-20%	Higher Selectivity
50% to 79%	Average Selectivity
Less than 50 th percentile	Lesser Selectivity

Note. Categories of selectivity level loosely based on Barron’s measures of selectivity (Barron’s Educational Services, 2010).

Next, the researcher created selectivity categories for general college admission tests (i.e., the SAT and ACT), relying upon the percentiles of these test scores for classification. The author referenced Barron’s Measure of Selectivity (Barron’s Educational Services, 2010) in conjunction with the findings of Camara and Echternacht (2000) and Pascarella et al. (2006) when creating these benchmarks (see Table 3.5).

Table 3.5 General College Entrance Exams Categories

Entrance Exam	Lesser Selectivity Scores and Percentiles	Higher Selectivity Scores and Percentiles
SAT	920 Combined 460 each, verbal or math 33 rd Percentile	1300 Combined 650 each, verbal or math 90 th Percentile
ACT	18 Composite 34 th Percentile	28 Composite 90 th Percentile

When compiling data, the author used the following additional guidelines:

- When no data was available, the author used an additional category labeled as no data listed (NDL);
- When institutions indicated certain material was not required, it was classified as ‘specifically stated as not required’ (SSNR);
- When institutions included a requirement without a specifically stated parameter, data was labeled as ‘as required, no parameter listed’ (REQ: NPL); and
- The author noted whenever any measures of academic preparedness specific to schools of nursing were indicated by the institution.

Following the compilation and categorization of all data, the researcher began to analyze trends and patterns within and across institutional type to address each research question.

In summary, the researcher categorized each school of nursing by placing data in rows on a corresponding data sheet for each pre-licensure program type. Within each of these data sheets, each institution was identified by name and by institutional control (i.e., public, private, or private-religious). Columns in the data sheet were headed by HCAIs as indicated by the

information gleaned from each school’s website. This process resulted in three data sheets, one each for HBDPL, AD, and BSN programs. To illustrate the tool formed by this process, Table 3.6 illustrates a section of the data sheet for college-level HCAIs for four BSN programs.

Table 3.6 Example Data Sheet

School	Institutional Control	SAT Scores	ACT Scores	HSGPA Scores	HSR Scores
Pa College of Technology	Public	1470-1720 (490-574)	21-25	2.96-3.46	NDL
PA State University	Public	1750-1900 (583-633)	26-30	3.52-3.97	NDL
Robert Morris University	Private	1000	22	3.0 Preference	NDL
St. Francis University	Private-Religious	1000 (500 minimum, each)	21	3	NDL

Note. Table represents HCAIs in the form of various general and nursing-specific entrance exams as indicated by institutions’ admission requirements.

3.10 DATA ANALYSIS

“Qualitative analysis of data involves the non-numerical organisation [sic] of data in order to discover patterns, themes, forms and qualities...” (Labuschagne, 2003, p. 102). Thus, the researcher analyzed the categorized data to identify trends within and across institutional type. As seen in the review of the literature, educational research provides some general benchmarks

for selectivity; however, this research fails to establish clearly defined parameters for levels of selectivity.

To review, Camara and Echternacht, (2000) noted that highly selective colleges had mean SAT admission scores of 650, while the mean score for “a national cohort of college bound seniors” (p. 1) was 500. Similarly, Pascarella et al. (2006) identified that attendees of institutions with the highest levels of selectivity had an average combined score of 1400 (i.e., a score of 700 on both the verbal and math sections), which is far above the mean score of 500 (i. e. of an individual score on either the verbal and math sections) demonstrated by “a national cohort of college bound seniors” (Camara & Echternacht, 2000, p. 1). Per the SAT website (Percentile Ranks, 2012) , a combined score of 1000 lies in the 47th percentile, and the NCAA standards present a lower threshold for academic preparedness and institutional selectivity, listing a range for combined scores of 820 to 1010.

For the purposes of this study, high measures of selectivity included an individual SAT score of 650 or greater (1300 combined score). In comparison, the threshold for a lesser measure of selectivity was a combined SAT score of 915, the mean of the NCAA’s range of 820 to 1010. High levels of selectivity for HSGPA was considered as 3.4 to 4.0 (A- to A), and 10 to 20 percent for HSR.

Nursing-specific admissions tests were classified for the purposes of this work, as non-competitive, based upon the literature that indicates that an admissions test is different from traditional college measures such as the SAT or ACT. Data was analyzed to determine the category of competitiveness in which nursing admissions criteria lie. If no information about a specific measure of academic preparedness was listed, the item was coded as no data listed (NDL). The other two categories used in the analysis for items of academic preparedness

includes one that specifically states that a certain measure is not required (SSNR) and another that demonstrated the measures were required, but without value parameters (REQ: NPL).

In analyzing the data, the researcher completed the following tasks:

1. Profile each institution by pre-licensure program type and place name on corresponding data sheet;
2. Profile each institution by institutional control, and identify as such on data sheet;
3. Insert HCAI requirements for each institution under the appropriate column;
4. For each of the three pre-licensure program types, compare ranges and draw for each dimension of HCAIs;
5. Classify HCAI admissions requirements in regards to selectivity;
6. Compare patterns and trends across institutional type and institutional control. (For example, all programs were compared collectively by type as well as by institutional control. All programs were then analyzed within the context of institutional control; hence, all privately controlled HBDPL, AD, and BSN programs were examined for similarities and differences. The same was done for public and private-religious institutional control.

The results of this analysis process will be presented in the following chapter.

4.0 RESULTS AND DISCUSSION

One of the purposes of this study was to explore the similarities and differences in admissions criteria as measures of human capital for each of the three differing program types for pre-licensure nursing education. Additionally, this study examined similarities and differences in admissions criteria by institutional control. The principal intention of this study, however, was to determine levels of selectivity for pre-licensure programs for nursing education. This chapter will provide answers to each of the research questions, and will include key findings in a table or graph format.

4.1 RESEARCH QUESTION ONE

The section provides answers to the first research question: *What are the measures utilized to assess academic preparedness, known for the purposes of this study as Human Capital Assessment Indicators (HCAIs) utilized by pre-licensure schools of nursing?*

Nearly three-fifths of all pre-licensure nursing programs listed a requirement for HSGPA within their college-level admissions criteria. Additionally, 22% of all programs included a requirement for ACT scores, while 42% required the combined verbal and math SAT scores. Another 15% held SAT scores as a requirement; however, these institutions did not indicate expected values for these scores. Admissions requirements regarding the SAT II were less

prevalent. One program indicated that SAT II scores were not accepted and not required; one program listed a need for two subject tests, but did not state specifically which two tests were required; and one program used the SAT subject test for placement purposes only. These three programs requiring SAT writing and/or SAT II scores were BSN programs. Finally, only 15% of all programs listed HSR as a requirement. Figure 4.1 illustrates these results.

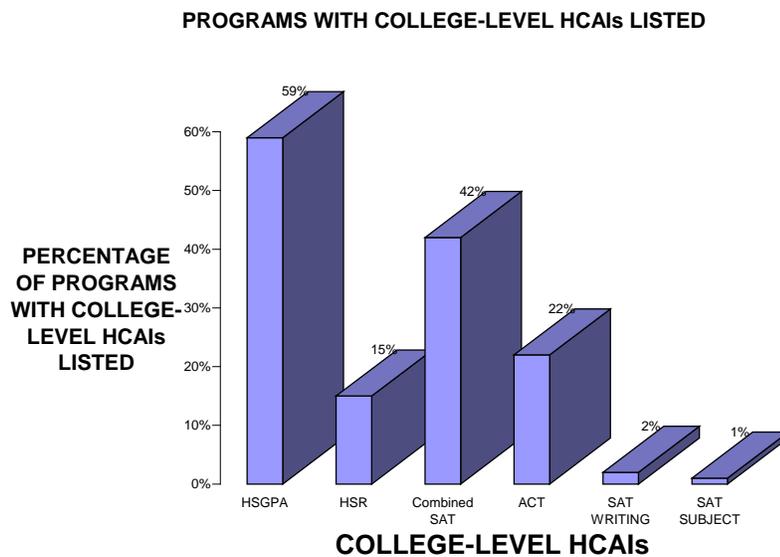


Figure 4.1. Percentages of Nursing Programs with Admission Requirements Including HCAIs

Data was then analyzed with respect to the HCAIs represented within the three different nursing pre-licensure programs. Table 4.1 illustrates the percentages of programs requiring the various HCAIs. These results are discussed in detail in the following paragraphs.

Table 4.1 Percentages of Nursing Programs with Admission Requirements Including HCAIs by Program Type

HCAIs	BSN	AD	HBDPL
HSGPA	52 %	67 %	68 %
HSR	15 %	7 %	26 %
SAT I (Combined verbal and math)	42 %	41 %	37 %
ACT	24 %	22 %	21 %
SAT Subject	10 %	0 %	0 %
SAT Writing	0%	0 %	0 %
Nursing specific HCAIs	12 %	26 %	58 %

Of the 33 BSN programs, the results for HSGPA were as follows: 52% listed parameters; 12 % listed HSGPA as a requirement, but with no scores listed; and 36% did not indicate a requirement for this HCAI. Fifty-seven percent of BSN programs listed some SAT requirements, leaving SAT unlisted as a requirement for over one-third of BSN sample. Two-fifths of the BSN programs listed requirements for ACT composite scores, with 24% dictating specific parameters and 36% not explicitly defining scores.

For the 27 AD programs, the HCAIs were distributed differently than for those of the BSN programs. Sixty-seven percent listed HSGPA requirements, while the remaining one-third had no listed requirements for HSGPA. Forty-one percent of the AD programs listed specific requirements for the SAT combined verbal and math scores, while the remaining programs had no requirement listed. Nearly one quarter (22%) of the AD programs indicated requirements for ACT scores, but an additional 11% included these scores as a requirement without defined parameters. No AD programs posted requirements for SAT writing or subject tests, and only 7% of AD programs shared a requirement for HSR.

Over two-thirds of HBDPL programs listed parameter requirements for HSGPA, 26% listed HSR, 37% listed SAT combined verbal and math scores, and 21% listed ACT scores. There were no HBDPL programs that listed a requirement without a parameter or score. The remaining schools listed no requirements for any of the traditional college level admissions HCAIs.

While Table 4.1 indicates the percentages of programs that explicitly require various HCAIs, Table 4.2 displays the percentage of programs that specifically stated the HCAIs were not required (SSNR), and Table 4.3 displays the percentage of programs requiring HCAIs without indicating specific parameters (REQ-NSL).

Table 4.2 Percentage of Programs Specifically Stating that HCAIs were not Required

HCAI	BSN	AD	HBDPL
HSGPA	0 %	0 %	0 %
HSR	0 %	0 %	0 %
SAT (Combined verbal and math)	0 %	0 %	0 %
ACT	0 %	70 %	0 %
SAT Subject (SATII)	0 %	0 %	0 %
SAT Writing	3 %	0 %	0 %

Table 4.3 Percentage of Programs Requiring HCAIs without Including Specific Parameters

HCAI	BSN	AD	HBDPL
HSGPA	12 %	0 %	0 %
HSR	0 %	0 %	0 %
SAT (Combined verbal and math)	15 %	0 %	0 %
ACT	36 %	11 %	0 %
SAT Subject (SATII)	3 %	0 %	0 %
SAT Writing	6 %	0 %	0 %

For all programs, there was little use of nursing-specific admissions tests. The most widely used test was the NLN, which was used by 11% of programs. Six percent of programs indicated the RNEE scores as a requirement, and 5% of programs requested PSB-RN scores. The COMPASS, DET, and TEAS were used by 1% of the nursing programs. No program listed the use of the C-NET. Figure 2 graphically represents the number of programs using nursing-specific admission tests.

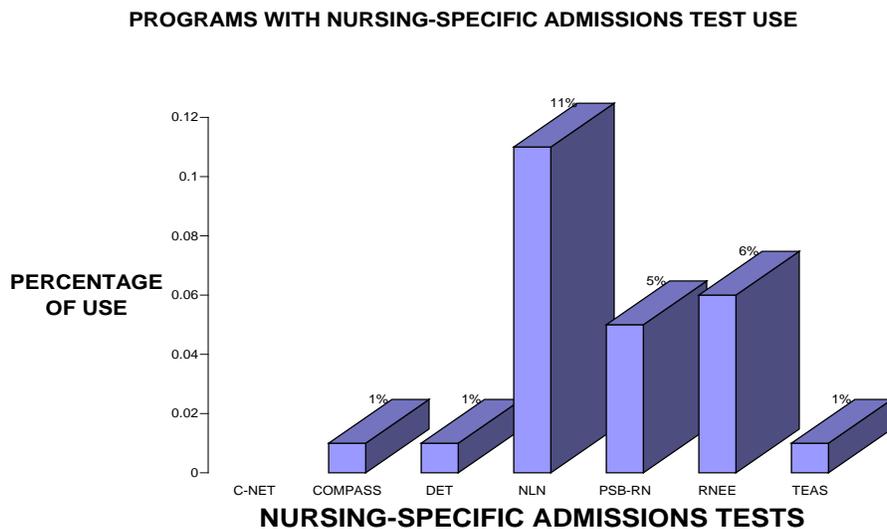


Figure 4.2 Percentage of Programs Using Nursing-Specific Admissions Tests

In terms of the nursing-specific measures for academic preparedness, BSN programs were least likely to require these measures, with 12% indicating their use. Twenty-six percent of AD programs indicated requirements for such measures, while 58% of the HBDPL had requirements for nursing-specific admissions tests. The RNEE was the most commonly used nursing-specific test by HBDPL programs. For the purposes of this study, the nursing-specific measures of HCAIs were considered to be non-competitive and of lesser selectivity in nature. Table 4.4 displays the number of baccalaureate programs enlisting nursing-specific admissions tests, and Table 4.5 displays the number of HBPDPL programs requiring nursing-specific admissions tests.

Table 4.4 Number of BSN Programs Requiring Nursing-Specific Admissions Test

Institutional Control	Number of Schools	Course-Specific GPA	C-NET	COMPASS	DET	NLN	PSB-RN	RNEE	TEAS	GED
Public	10	0	0	0	0	0	0	0	0	0
Private	6	0	0	0	0	0	0	0	1	0
Private-Religious	17	0	0	0	0	2	1	0	0	0
Total	33	0	0	0	0	2	1	0	1	0

Table 4.5 Number of HBPDPL Programs Requiring Nursing-Specific Admissions Tests

Institutional Control	Number of Schools	Course-Specific GPA	C-NET	COMPASS	DET	NLN	PSB-RN	RNEE	TEAS	GED
Private	17	0	0	0	0	3	2	5	0	0
Private-Religious	2	0	0	0	0	0	0	0	0	0
Total	19	0	0	0	0	3	2	5	0	0

As can be seen, the HCAIs used in pre-licensure program admission criteria vary. The criteria for even similar measures differ by institutional control and program type. Most programs listed the traditional college level requirements of HSGPA and an aptitude test score, whether it be the combined SAT math and verbal scores or the ACT score. The use of SAT writing and subject tests was nearly non-existent. Most AD and HBDPL programs listed a combination of requirements for HSGPA and nursing-specific admissions tests, while BSN programs combined the use of HSGPA and SAT scores in determining the academic preparedness of potential candidates. Of the nursing-specific admissions tests, no program in Pennsylvania reported using the C-NET. All of the other nursing-specific tests were used by at least one program.

4.2 RESEARCH QUESTION TWO

Research question two, *What is the level of institutional selectivity?*, is answered in the following section. To review the levels of selectivity as they align with HCAIs in this study, please review Tables 3.3, 3.4, 3.5, and 3.6.

Two BSN programs indicated highly selective HCAIs. One of these programs listed highly selective values for HSGPA, HSR, SAT scores, and the requirement for the SAT Writing Test. The other highly selective BSN program required highly selective score values for the SAT and ACT and scores from two SAT subject tests; however, in regards to the SAT subject tests, specific subject tests were not identified. *No other programs listed highly selective values.*

When looking across all programs for SAT score requirement, it was found that the mean SAT score for all programs was 999, which lies near the 47th percentile rank. Aside from the previously mentioned highly selective BSN programs, remaining BSN programs required a mean SAT score of 1067, which falls near the 60th percentile rank. AD programs required a mean SAT score of 895, reflecting the 29th percentile rank, and HBDPL programs required a mean SAT score of 880, indicative of the 15th percentile rank. *The mean SAT values for AD and HBDPL programs reflect values of lesser selectivity.* Figure 4.3 displays data regarding HSGPA selectivity.

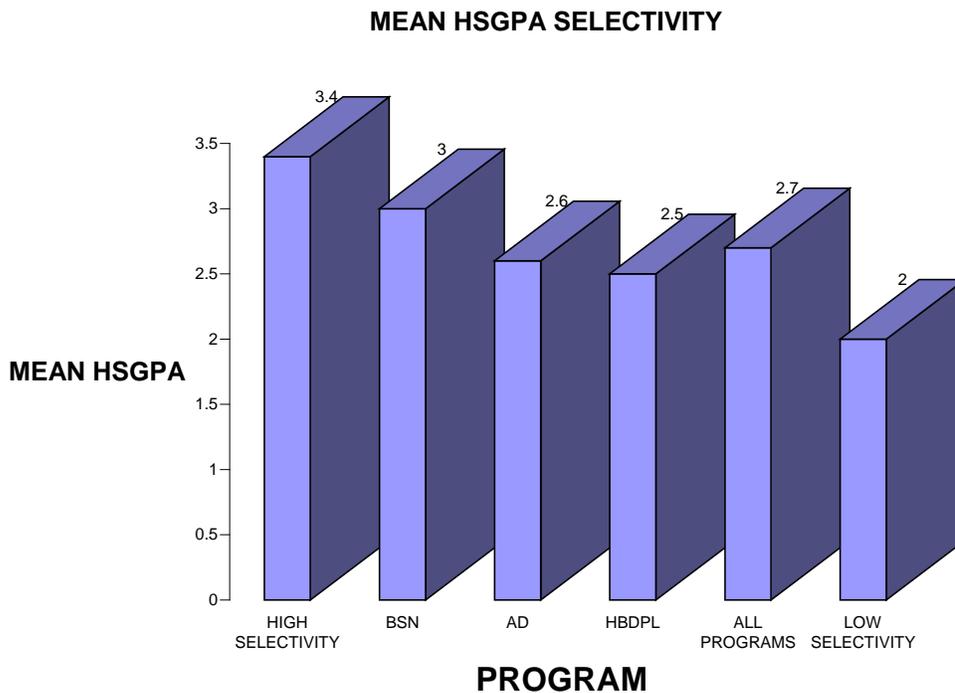


Figure 4.3 Mean High School Grade Point Average Selectivity

Three AD programs listed less selective SAT requirements and one listed less selective ACT requirements. No BSN programs listed less selective requirements for HSGPA, and only one listed less selective values for the combined SAT verbal and math scores. For the 19 HBDPL programs, four listed less selective requirements for SAT combined verbal and math scores, and one listed a less selective requirement for HSGPA.

In terms of HSGPA, the mean value was 2.7 for all programs. BSN programs generally required a 3.0, which is a letter grade of a B. The mean HSGPA for AD programs was 2.6, which represents a B-, and the mean HSGPA for HBDPL programs was 2.5, which also represents a B-. *Of all of the programs, only three, which were BSN programs, indicated highly selective HSGPA values.* Table 4.4 illustrates data regarding SAT scores and selectivity.

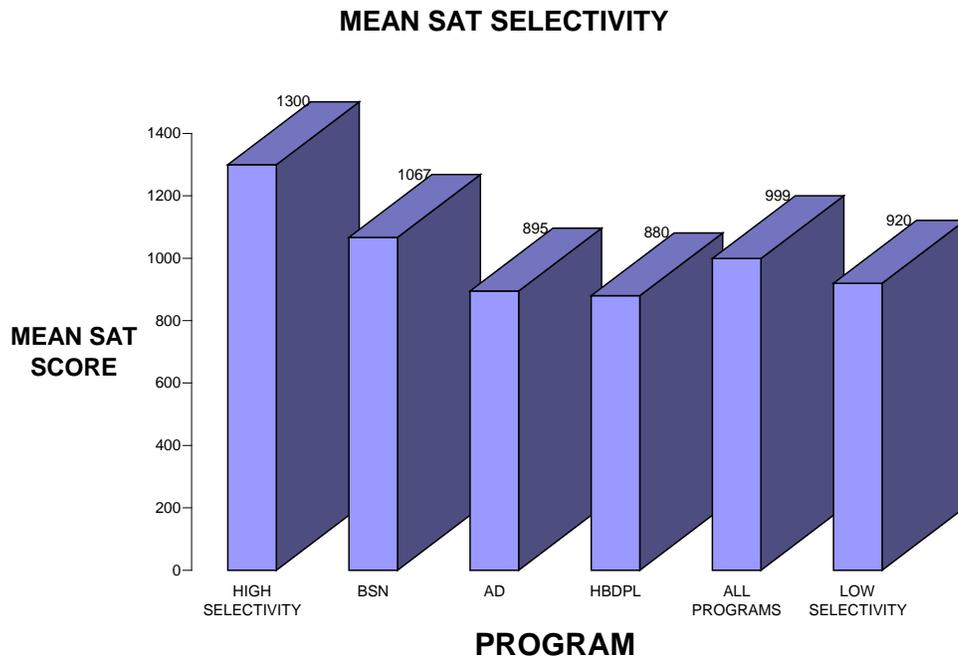


Figure 4.4 Mean SAT Score Selectivity

As for other measures of HCAIs, few institutions requested HSR, and only one listed the highly selective rank of 80%, which represent the upper 20th percentile. Two programs required SAT subject tests, and only one of these programs required the writing component of the SAT. To recall, the requirements for SAT subject tests and the SAT writing component were considered as highly selective HCAIs measures. Only two institutions, or one percent of the nursing programs, indicated this level of high selectivity.

As previously indicated, nursing-specific admissions tests were established as a lesser measure of selectivity when compared to the SAT or ACT. Twenty-two pre-licensure programs indicated the use of nursing-specific admissions tests. These 22 programs represented 27% of all pre-licensure programs in Pennsylvania, meaning that over one quarter of Pennsylvania programs were relying on non-selective measures of HCAIs. When looking at the types of programs using these HCAIs, it was not surprising that programs associated with less human capital acquisition employed these non-selective measures more frequently. In fact, 58% of HBDPL programs used these measures, 26% of AD programs, and while only 12% of BSN programs used these non-selective measures.

In summary, the process of institutional selectivity is an important aspect of student success in terms of program completion and success on licensing examinations. Institutional selectivity is also an important component in admissions criteria for higher education as it relates to the academic preparedness of the institution's applicant pool. Selectivity also relates to elements such as program accreditation and licensure, and it is critical for the profession of nursing in terms of institutional outcome criteria for first-time NCLEX-RN pass rates. There are noticeably few pre-licensure institutions with highly selective levels of admissions criteria. Most programs list modestly average selectivity criteria for admissions purposes.

4.3 RESEARCH QUESTION THREE

The following section provides answers to the third research question: *Are there differences in admissions criteria by program type?*

Half of the BSN programs listed numeric requirements for HSGPA, while 41% of the AD and 37% of HBDPL programs listed numeric requirements for HSGPA. Forty-two percent of BSN programs indicated values for the required SAT scores, with another 15 % requiring the SAT with no score parameter listed. Thus, 57% of BSN programs listed some type of SAT requirement. Conversely, 33% of BSN programs, 59% of AD programs, and 63% of HBDPL programs had no SAT score requirement. BSN programs listed one highly selective value for HSGPA at 3.8 (a letter grade of A+), and one HBDPL program listed the least selective HSGPA value at 1.75 (a letter grade of C-). BSN and AD programs most frequently indicated a HSGPA of 3.0 (a B letter grade), while 2.5 (a letter grade of B-) was the most commonly indicated value listed by HBDPL programs. BSN programs had the highest HSGPA mean value of 3.0, while the HBDPL programs had the lowest mean HSGPA value of 2.57.

All programs listed some values of lesser selectivity for SAT scores under 915, with the least selective value of 800 indicated by HBDPL programs, followed by 850 for AD programs, and 860 for BSN programs. One BSN program listed a highly selective SAT value, and overall BSN programs required the highest mean SAT scores of 1067 when compared to those of 895 and 880 respectively for AD and HBDPL programs. AD and BSN programs shared the mode and median SAT value of 1000. *HBDPL programs listed values of markedly lesser selectivity for SAT scores, with the median at 900, and a mean value of 880.* One thousand was the mode value for BSN and AD programs, with 920 for HBDPL programs.

While SAT scores and HSGPA were requirements for many programs, few programs indicated HSR in their admissions requirement. More specifically, only 15% of BSN programs, 7% of AD programs, and 26% of HBDPL programs mentioned HSR. HBDPL programs and AD programs shared similar mean HSR values of 56 and 55 percentiles, respectively; however, HBDPL programs had a slightly higher mode than the AD programs at the 60th percentile and 55th percentiles, respectively. BSN programs listed one highly selective value for percentile rank at 80% (upper 20th percentile), with a mean score of the 67th percentile and a median of the 70th percentile. No other programs listed a requirement for HSR in a highly selective percentile of 20% or greater. Overall, public BSN programs listed higher mean values for HSR than AD and HBDPL programs.

ACT scores were identified by 20-25% of programs; however, SAT subject tests were required by far fewer programs: 3% of BSN programs required the SAT subject tests, and 6% required the writing component of the SAT. One BSN program specifically stated that the SAT writing was not required. No other programs had requirements for the SAT writing test or subject tests. BSN programs listed higher values overall in terms of the mean, mode, median, and range, while HBDPL values were the lowest and AD programs fell nearly at midpoint. One AD program listed the lesser selective ACT score of 17, but HBDPL programs listed a more narrow and lower range of scores than either the BSN or AD programs. Figures 4.5, 4.6, and 4.7 summarize these differences in HCAIs included in admissions criteria of BSN, AD, and HBDPL programs.

BSN PROGRAMS HCAI REQUIREMENTS LISTED

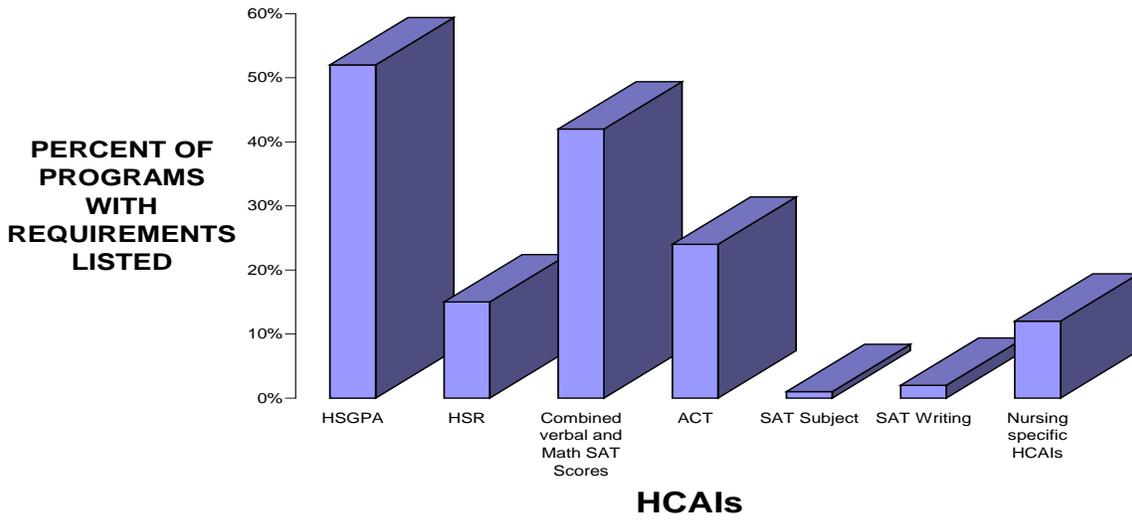


Figure 4.5 Percentage of BSN Programs Requiring HCAIs

AD PROGRAMS HCAIs REQUIREMENTS LISTED

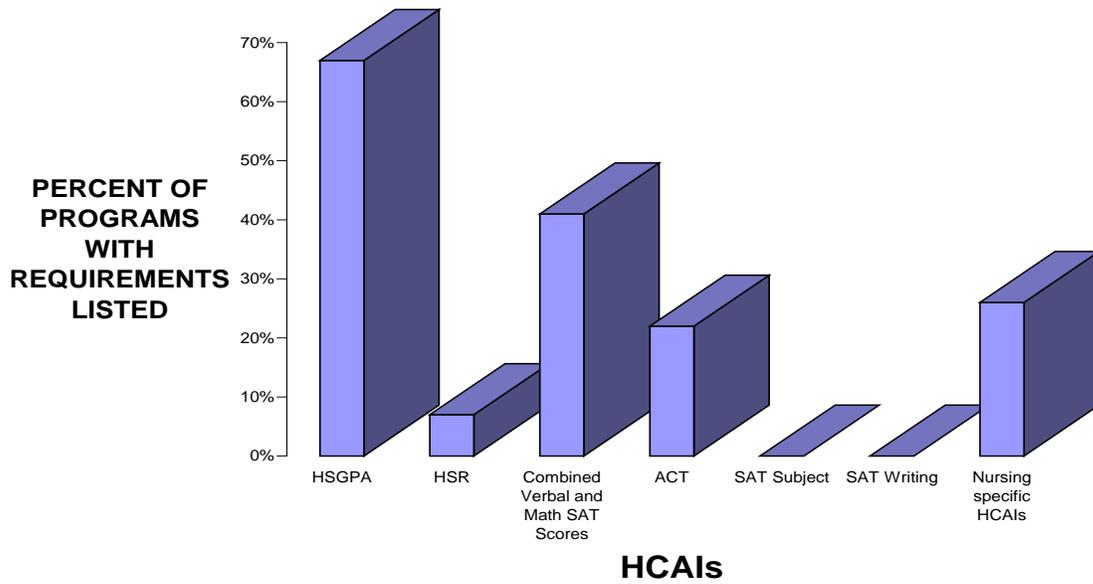


Figure 4.6 Percentages of AD Programs Requiring HCAIs

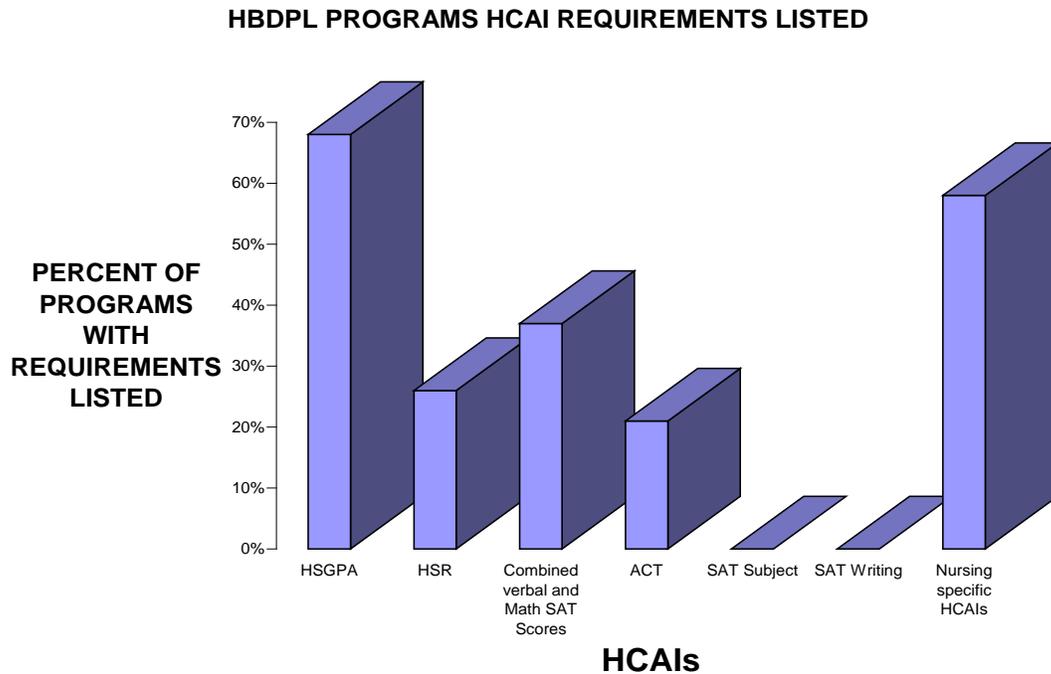


Figure 4.7 Percentages of HBDPL Programs Requiring HCAIs

Data indicated that there are indeed differences in admissions criteria by program type. These differences may create confusion in the applicant pool, especially with the lack of transparency and availability of comparison values for the nursing-specific admissions tests when compared with traditional college-level tests. As nearly three-fifths of the sample reported HSGPA in their admission materials, there was some uniformity in the use of this HCAI as a requirement for admission. The increased numbers of AD and HBDPL programs indicating a requirement for HSGPA identified more of an emphasis on the HSGPA as an important HCAI than did BSN programs.

In regards to nursing-specific admission tests, a higher percentage HBDPL programs used these HCAIs. As a reminder, these nursing-specific tests impart lesser measures of HCAI when compared to traditional college measures for HCAIs. Such differences in measures of

HCAIs create a lack of uniformity, thus an absence of a benchmark standard for the level of academic preparedness necessary for pre-licensure programs of nursing education. Figures 4.8, 4.9, and 4.10 illustrate the use of nursing-specific tests as HCAIs in BSN, AD, and HBDPL programs, respectively.

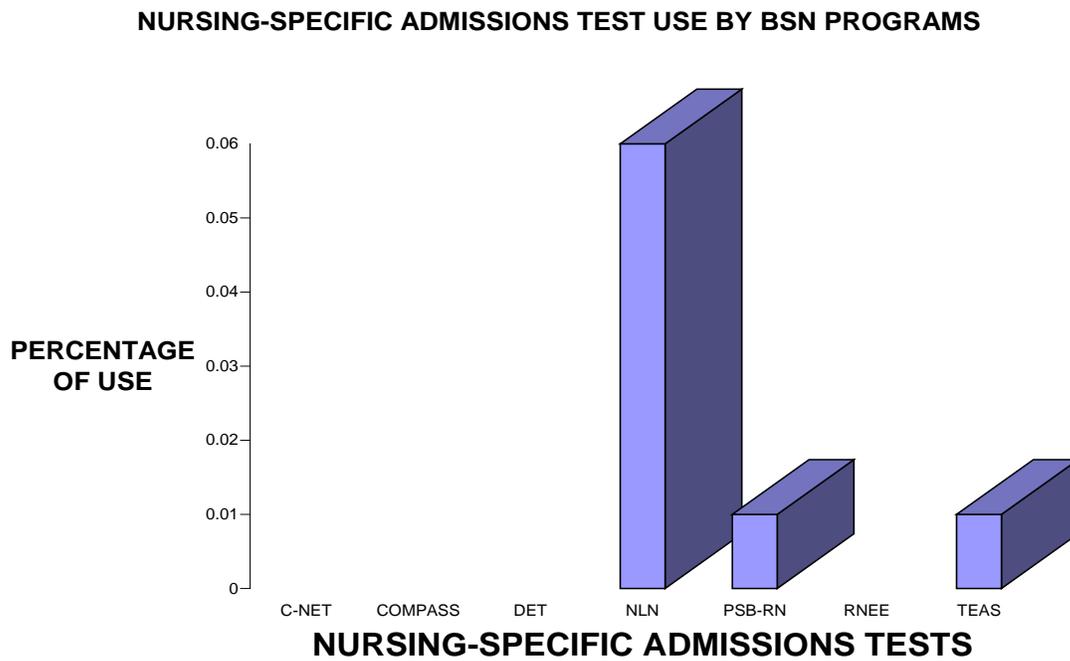


Figure 4.8 Percentages of BSN Programs Requiring Nursing-Specific Admissions Tests

NURSING-SPECIFIC ADMISSIONS TEST USE BY AD PROGRAMS

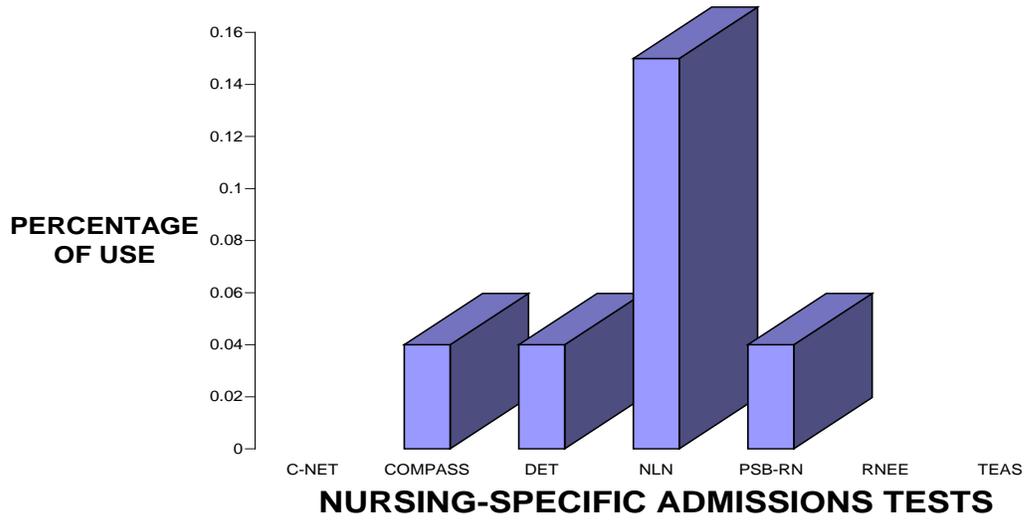


Figure 4.9 Percentages of AD Programs Requiring Nursing-Specific Admission Tests

NURSING-SPECIFIC ADMISSIONS TEST USE BY HBDPL PROGRAMS

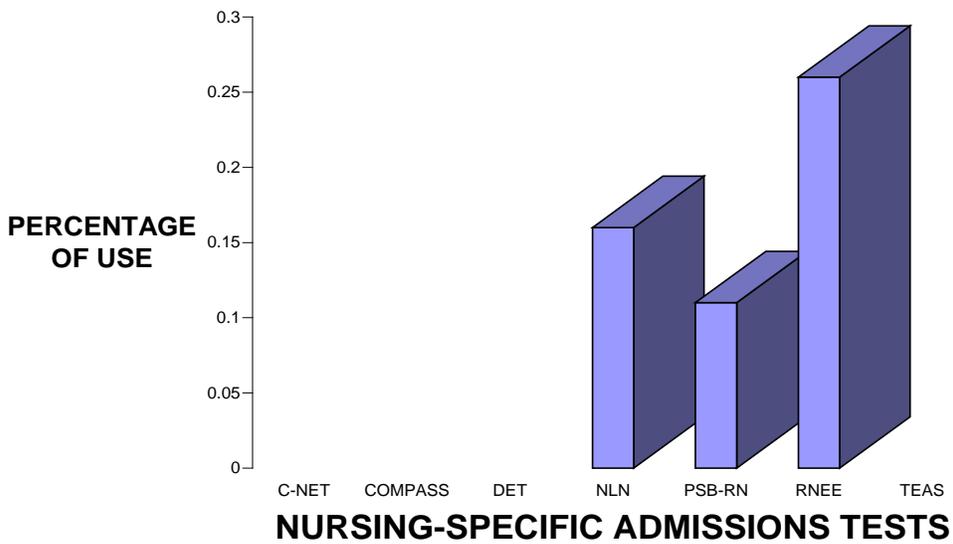


Figure 4.10 Percentages of HBDPL Programs Requiring Nursing-Specific Admission Tests

In summary, HBDPL programs listed the lesser values for academic selectivity, while baccalaureate programs listed higher levels of selectivity. AD programs, while usually somewhat higher in selectivity requirements than those for the HBDPL programs, aligned more closely to HBDPL program requirements.

4.4 RESEARCH QUESTION FOUR

Answers to research question four (i.e., *Are there differences in admissions criteria by institutional control?*) are provided in the following section. In order to answer this question, comparisons were made between the admissions criteria presented by public, private, and private-religious.

For BSN programs, one private-religious program demonstrated high selectivity in HSGPA, HSR, and SAT scores. This program also required the SAT writing test. Barron's Measure of Selectivity classified this institution in the 'most competitive' category, which is the highest level of selectivity on Barron's measure (Barron's Educational Services, 2010). In comparison, one private program required highly selective SAT and ACT scores and requested scores from any two SAT subject tests. This private institution was also classified as 'most competitive' by Barron's measure of selectivity, and it is nationally well-known and respected institution that potentially would be reflective of DesJardins et al.'s (1999) halo effect.

As SAT writing and subject tests indicated particularly high selectivity for programs in this study, it is important to note any differences in institutional control. One public program listed the requirement for the SAT writing test, and one private-religious program stated that the

SAT writing was not accepted or required. There were no public, private, or religious AD or HBDPL programs requiring these highly selective HCAs.

In terms of HSGPA, public BSN programs required higher mean values than private or private-religious programs. One private-religious BSN program listed a highly selective HSGPA value of 3.8, while two public BSN programs had higher selectivity values of 3.5. A private-religious HBDPL program listed the least selective HSGPA requirement of 1.75. Overall, private-religious programs required lower HSGPA values. However, the mean HSGPA values for all programs ranged from 2.6 for private and private-religious programs to 2.8 for public institutions. Figure 4.11, 4.12, 4.13, and 4.14 illustrate differences in HSGPA by institutional control.

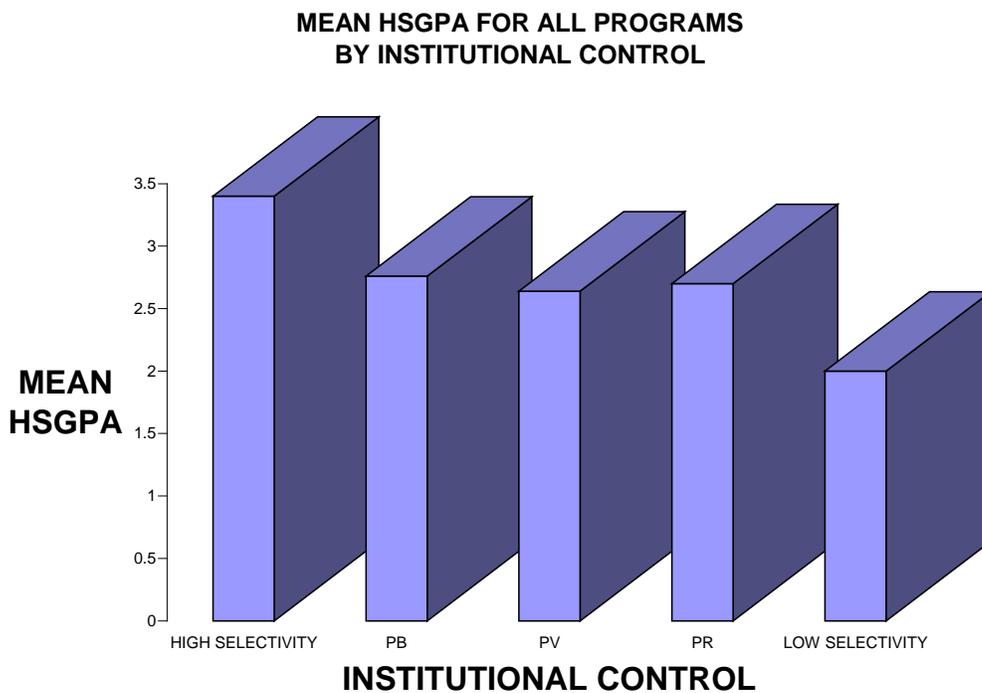


Figure 4.11 Mean HSGPA for All Programs by Institutional Control

BSN MEAN HSGPA BY INSTITUTIONAL CONTROL

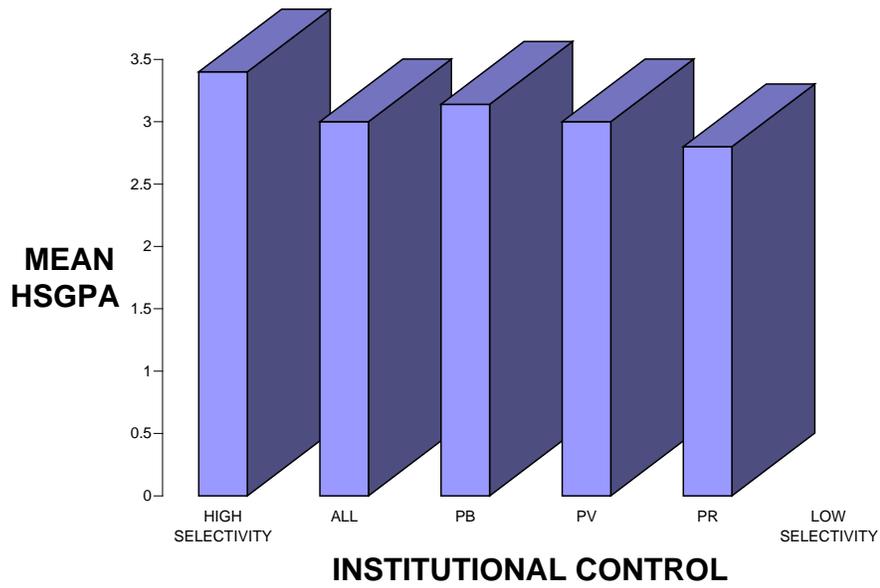


Figure 4.12 Mean HSGPA for BSN Programs by Institutional Control

AD MEAN HSGPA BY INSTITUTIONAL CONTROL

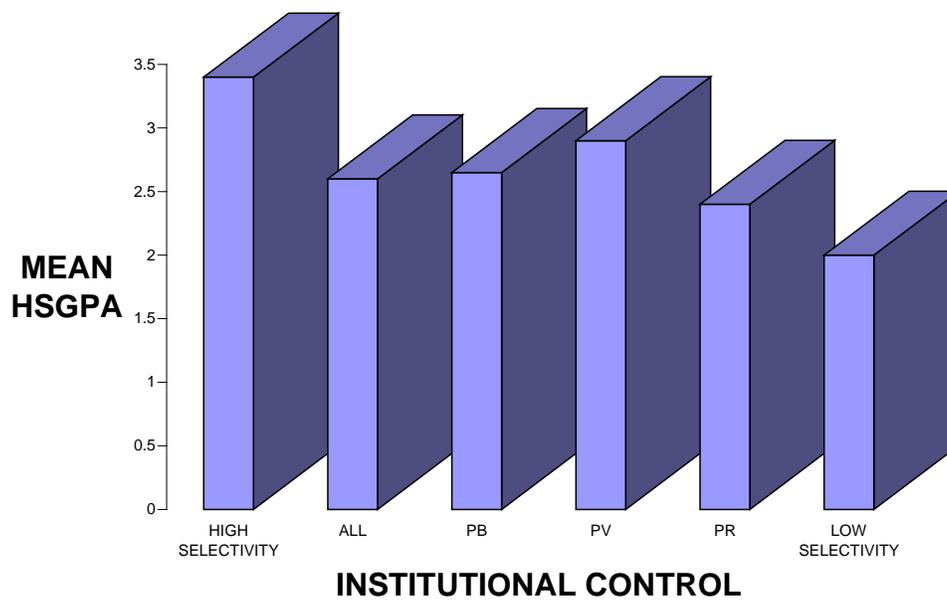


Figure 4.13 Mean HSGPA for AD Programs by Institutional Control

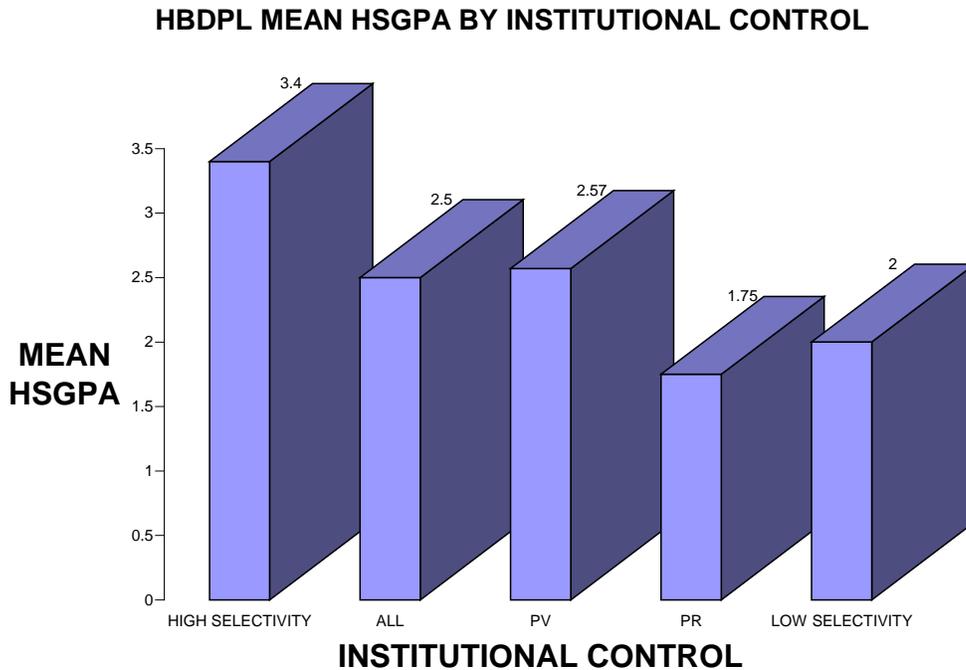


Figure 4.14 Mean HSGPA for HBDPL Programs by Institutional Control

Eleven institutions included criteria for HSR: two public BSN programs, two public AD programs, two private-religious BSN programs, and five private HBDPL programs. The public and private BSN programs listed similar mean HSR values of 68 and 67 respectively, while HBDPL programs had a mean HSR value of 56. One private-religious BSN program indicated a highly selective 80th percentile requirement. Private HBDPL programs listed a narrow range for HSR at the 50th to 60th percentile.

Public institutions had higher mean values for combined SAT verbal and math scores, while private institutions listed the lowest mean values. One private-religious BSN program required a score of 1330 for admissions, a highly selective value. However, aggregated SAT

combined scores for private-religious BSN had the lowest mean value of 1031, trailing both publically and privately controlled BSN programs with mean values of 1074 and 1190, respectively. Private HBDPL programs, the only non-baccalaureate program providing score values, had the lowest mean value of 864 for the combined verbal and math SAT. Two private HBDPL programs listed the lowest values of 800, and two listed values of 900, indicating lesser selectivity.

For ACT scores, privately controlled institutions had overall higher values, with one private institution listing a highly selective value of 30. Overall, private-religious institutions required lower values, with one of the private-religious AD programs accepting a lesser selective ACT score of 17. Much like with SAT scores, the mean ACT scores for private and private-religious institutions were similar: 20.4 and 20.7, respectively. Public institutions had a mean ACT score of 22.

In summary, institutional control is relevant to institutional selectivity, student enrollment, student graduation rates, and student enrollment choices. These choices are influenced by an individual's human capital acquisition. Overall, private institutions had wider variances in selectivity, with some at polar opposites of the selectivity range. Public institutions were more consistent when compared to each other, both at the BSN and AD levels. However, even with public institutions, BSN criteria indicated increased selectivity when compared with AD program criteria.

4.5 RESEARCH QUESTION FIVE

Research question five is, *Are there trends and patterns among the findings?* The researcher addressed this question by providing comparisons of the use of HCAIs by program type as well as institutional control.

This study found that there were few HCAIs which were either well above or well below most of the others that were identified. Public institutions were more consistent across values listed for HCAIs as indicated by scores close in range. Private and private-religious institutions had wider ranges, thereby making a few of these institutions either highly selective or of lesser selectivity. For example, a private HBDPL listed the lowest score of 800 for combined SAT verbal and math, while a private BSN program had the highest value of 1380 for the same category. Additionally, a private-religious HBDPL program listed the lowest and least selective HSGPA value of 1.75, while a private-religious AD program listed the lowest and least selective ACT score of 17. Overall, HBDPL programs had lower values for college-level admissions criteria and were more likely to use non-competitive nursing-specific entrance examinations. No public BSN programs used the nursing-specific entrance examinations; public AD programs used these exams more than private AD programs. In sum, the HCAIs used as admissions criteria by pre-licensure schools of nursing are quite varied with marked differences in selectivity.

At the time of this study, there were more private-religious BSN programs in Pennsylvania than public and private programs combined. Furthermore, 20% of AD programs in Pennsylvania were private-religious. The pattern of lower levels of selectivity for private religious pre-licensure programs presupposes the admission of increased numbers of nursing students with lower levels of academic preparedness, given that 58% of the pre-licensure programs in Pennsylvania are non-baccalaureate and 70% of BSN programs are private or

private-religious institutions with lesser selectivity requirements. The trends and patterns reflect that only two programs in Pennsylvania are highly selective in their requests for admissions criteria.

5.0 CONCLUSION

HEIs routinely assess potential candidates as part of the admissions process. This study used to the lens of human capital to classify various indicators reflective of higher human capital, using this information to gauge the selectivity of pre-licensure nursing programs in the state of Pennsylvania.

Depending on the specific discipline or program, admissions criteria may be clearly defined and intentionally reflective of the rigor and preparedness necessary for students to succeed. A student's academic preparedness is essential for academic success, including outcomes such as program completion and passing licensing examinations. Thus, admissions criteria are an important component of any admissions process. In the nursing field, admissions criteria may be of critical importance, considering that graduates will be responsible for life and death decisions. The results of this study have revealed the following important findings about the admissions criteria used by pre-licensure nursing programs in Pennsylvania:

1. There was no uniform set of admissions criteria utilized by any of the three pre-licensure programs for nursing education;
2. Selectivity ranged from higher selectivity criteria to lesser levels of selectivity criteria;
3. The majority of pre-licensure programs for nursing education exhibited modestly average levels of selectivity criteria;

4. Programs offering the least amount of educational preparation (i.e., the AD and HBDPL programs) tended to have the least selective admissions criteria; and
5. The numerous nursing-specific admissions tests lacked transparency for comparison.

Based upon the variances in nursing practice as noted in the literature review and the existence of three non-equivalent forms of pre-licensure education, the findings of this study raise a set of interesting questions:

1. Does variability in admissions criteria serve the purpose of allowing more seats in a profession that currently has present and predicted future shortages?;
2. Does a market demand for nurses overshadow the need for higher levels of academic preparedness and pre-licensure preparation?;
3. Is there a need for a nursing-specific admissions examination, and if so, should there be a singular test that could offer uniformity, such as the PCAT (Pharmacy College Admission Test)?;
4. Are the stakeholders, such as patients and those who employ nurses, aware of the variability in the admissions academic preparedness criteria?;
5. Can the problems identified within this study be rectified by serious examination and changes in policy at the state level, such as in changes to the PA Code Chapter 21 and the nurse practice act?; and
6. In terms of academic preparedness, does the intake for pre-licensure nursing programs have resulting consequences in terms of outcomes in the nursing profession (e.g., differences in attitudes and practice levels of nurses)?

5.1 IMPLICATIONS

Educational success and attainment contributes to an individual's human capital acquisition, which is based upon an individuals' ability and personal assets. Academic preparedness and the resulting ability to acquire high levels of educational attainment are said to be beneficial "both from the individual and from the aggregate perspective" (de la Fuente and Ciccone, 2002, p. 3). From the aggregate perspective of professional nursing, uniformity in policies regarding academic preparedness could serve to equalize the differences of individuals who select differing pre-licensure programs. An increased and uniform level of academic preparedness for pre-licensure nursing candidates could improve patient outcomes by reducing mortality rates, increase healthy behaviors through improved patient teaching, and increase the overall professional behaviors within the discipline of nursing. Data elicited from this study raises serious questions regarding practices in pre-licensure nursing education and nursing policy, justifying further research about these practices. The importance of the topics of modest selectivity and lack of uniformity of admissions will be individually discussed in the remainder of this chapter.

5.1.1 Broad Implications

The data from this study revealed that few pre-licensure programs in Pennsylvania display requirements for highly selective levels of academic preparedness. As stated previously, "Educational attainment has become the primary route to occupational attainment in modern industrial societies" (DiMaggio & Mohr, 1985, p. 1233), and a bachelor's degree "is the gatekeeper to myriad social and individual benefits, ranging from income, employment stability,

and *occupational prestige* [emphasis added] to engagement in civic and political activities” (Cabrera et al., 2006, p. 155). Based on the importance of educational attainment, the presence of few highly selective criteria, and the presence of lesser levels of academic selectivity by some institutions, addressing the three very dissimilar and non-equivalent models of education might have the following unintended effects:

- Reducing the attraction of high SES candidates and thus candidates that possess high academic qualifications (i.e., candidates whose HCAs are in the upper quartile);
- Inadvertently attracting a cohort of persons with lower human capital through lesser levels of selectivity for pre-admissions HCAs (as lower human capital is correlated with negative social behaviors that may result in sanctions of professional nurses’ licensure as described by Lochner (2004) and Mocan et al. (2004);
- Impairing aggregate productivity at both the micro and macro-economic levels, in light of the research that has been done which identified practice differences in nurses by pre-licensure program type (de la Fuente & Ciccone, 2002, p. v);
- Reducing the stock of human capitals for individuals and the profession as a whole; and
- Thwarting social cohesion within the profession.

The market value of nursing, as may be prompted by the determination that “a healthy nation depends on the adequate supply of well-educated and well-trained health professionals” (Schiff,

2008, p. 1), could be the necessary impetus for an increased standard of academic preparedness for candidates of pre-licensure programs for nursing education.

5.1.2 Implications for Nursing Education

Only two baccalaureate programs (one private and the other private-religious) listed highly selective HCAs for their admissions criteria. Many programs listed values for HCAs of lesser selectivity. For example, some AD programs listed SAT scores in the 29th percentile rank, while some HBDPL programs listed SAT scores in the 15th percentile rank. With the mean SAT score for all programs falling into the 47th percentile rank, these findings deserve further evaluation. Justifiably, one might ask if the profession of nursing is cognizant that its admissions standards are far from those attracting the most academically prepared students, that is, those students whose admissions test scores and HSGPA are in the upper quartile or quintile.

The lack of standardized admission criteria is of additional concern in the field of nursing education. Currently, a multitude of nursing-specific admissions tests exist that are not congruent with college-level HCAs such as those of the SAT or ACT. In fact, the operational definition of the C-NET indicates that it assesses more *basic knowledge* than typically required of a college applicant. Such language may provide a linguistic register to a prospective applicant that academic preparedness is not as critical for a pre-licensure nursing program as for college-level work (Perna & Titus, 2004).

Further exploration is needed to understand why 36% of Pennsylvania BSN programs do not list the SAT as an admission requirement. More importantly, it is critical to determine why 59% of AD programs and 63% of HBDPL programs do not list a requirement for SAT, a college-level HCAI that has been shown to positively correlate with college-level success.

Additionally, it is important to determine why some programs list a requirement for a specific HCAI without a defined value by which a prospective applicant may determine their own academic fit with the institution.

With regard to audience-specific documents, the “competent, professional reader can, however, read into the document a great deal more than the lay person” (Atkinson & Coffey, 1998, p. 51). Any document, including those containing admissions criteria for prospective students, creates a reality and a representation which is visible to those who are the consumers of the document (Atkinson & Coffey, 1998). Most importantly, these admissions documents reflected “the extent to which the documentary realities constitute distinctive levels of representation” (Atkinson & Coffey, 1998).

Documents conveying low levels of selectivity to the reader (i.e., prospective nursing students) may well attract less academically prepared students while deterring highly academically prepared students. “Decreasing shares of students from middle- and upper-income families are enrolling in public two-year institutions, while increasing shares of students from upper-income families are enrolling in public and private universities” (Perna & Titus, 2004, p. 502). Additionally, the absence of admissions criteria requirements within documents designed to inform prospective students may lead to personal inferences and conclusions about that which is required. In terms of HCAIs and potential candidates:

much of the value of test scores is realized *before the college admission officer* ever receives the scores. They *provide useful information to students and counselors and others advising students* [emphasis added] that is useful in the selection of colleges not only where the students *application is apt to be competitive* but where he or she is

prepared to meet the academic demands of the institutions [emphasis added] (Linn, 1990, p. 308).

When attempting to attract applicants with high levels of academic preparedness, one cannot ignore the institutional halo effect (i.e., an educational institution's positive reputation) (DesJardins et al., 1999). The halo effect also exerts the opposite effect of deterring lesser academically prepared or motivated students. Thus, documents containing admissions criteria are important in determining the external representation of institutional as well as indicating programmatic selectivity. Only two programs displayed highly selective admissions criteria such as to elicit a halo effect.

Academic preparation and achievement affect choice to attend higher education; however, habitus and socioeconomic status influences all of these elements (Perna & Titus, 2004). As found in this study, lower levels of institutional selectivity were found to some degree within all programs, but more so in the AD and HBDPL programs. This lack of selectivity reduces the pipeline of academically prepared students. Such average admissions practices could deter the best and the brightest students (i.e., those in the upper quartile) from applying to a program of nursing education.

Based on the findings of this study, pre-licensure programs for nursing education need to raise the bar in terms of institutional selectivity to increase the required levels of pre-admissions academic preparedness. In doing so, these programs will raise the individual candidates' habitus as a strategic plan to reduce discrepancies in professional nursing practice as related to pre-licensure preparation. As "policies that raise the quantity and quality of the stock of human capital are comparable with increasing social cohesion" (de la Fuente & Ciccone, 2002, p. 3),

schools of nursing must recognize the role of selectivity in the creation of a pool of highly academically prepared students and intellectually engaging nursing programs.

5.1.3 Implications for Nursing Practice

As an individual's attitudes and values (i.e., habitus) is likely to 'pass through' a program of pre-licensure education, it is critical that the nursing profession identify proxy measures which may indirectly measure such attitudes and values. Academic preparation is reflective of an individual's habitus and is measured by HCAIs. Thus, HCAIs may begin to be used as proxy measures for habitus, positive attitudes, and values that are critical to the practice of nursing (DiMaggio & Mohr, 1985; Habley & McClanahan, 2004). That patient's mortality level is affected by pre-licensure nursing education is noteworthy, and speaks to the need for not only increased levels of pre-licensure academic preparedness, but to programs that can command HCAIs reflective of individuals with a habitus geared toward positive social, and thus, professional, behaviors. Since HSGPA was the single best predictor of academic success, increased levels of selectivity specifically in regards to HSGPA may be the best HCAI by which to anticipate positive social and professional behaviors of practicing nurses.

As previously stated, the "HSGPA may well be a proxy for academic motivation, study habits, commitment, educational goals, and diligence, which are all indicators of an individual's human capital, irrespective of institutional academic rigor" (p. 117). Congruent with studies indicating the importance of HSGPA, the findings of this study revealed that 52% of BSN programs, and 67% of AD, and 68 % of HBDPL programs use HSGPA as an admissions HCAI. The findings of this study also revealed that few programs used highly selective parameters for HSGPA. More specifically, the mean HSGPA for all programs is 2.7, which is a B-. The mean

HSGPA for AD and HBDPL programs, 2.6 and 2.5 respectively, are also a B-. Only BSN programs collectively require a HSGPA of a B or 3.0. Except for two programs in Pennsylvania, no programs indicated highly selective criteria for HSGPA. Overall increased selectivity for all measures of HCAIs may ultimately serve to reduce the discrepancies noted within graduates of differing pre-licensure program types. The profession of nursing may wish to establish a benchmark admissions standard for HSGPA.

5.1.4 Implications for Nursing Policy

Policy-makers in higher education institutions, legislators who are empowered to change laws, and professional organizations with accrediting powers need to embrace the value of test scores (Linn, 1990, p. 308). For example, the guidelines for academic preparedness for pre-licensure programs of nursing education within the Pennsylvania Code have not been updated since 1983 and were not congruent *at that time* with the rigorous academic preparedness necessary for college-level work. The Pennsylvania State Board of Nursing admissions guidelines should be updated to reflect the academic rigor that is necessary for college level work by current standards.

Professional accrediting bodies, such as the AACN and the NLN, could consider implementing admission standards necessary for the accreditation process, which could in turn increase the levels of academic preparedness for candidates of pre-licensure. Also, it should be determined if tests such as the SAT and ACT are accurate predictors of nursing program success, and if not, stake-holders should seek to create one standardized admissions test for the nursing profession, such as that of the PCAT or MCAT.

Additionally, the increased use of HCAs indicative of higher selectivity (e.g., SAT subject and writing tests) could increase overall selectivity in the pre-licensure admissions process. As previously noted, Geiser and Studley (2002) found that “SAT II scores were the single best predictor” (p. 5) of college GPA at the University of California. The present study found that only two Pennsylvania programs used the SAT subject tests and the SAT writing test. Changes in admissions standards could include requirements for SAT subject tests and writing test, which could contribute to the increased academic preparedness of potential students. These increased standards could also be benchmark standards for accrediting bodies. Such standards could also be incorporated into the states’ admissions guidelines.

5.1.5 Implications for Future Nursing Research

As indicated in this study, admissions criteria are widely varied and standards are modestly average. Future research in nursing should begin to explore pre-licensure programs’ admissions criteria and their importance to outcome in nursing practice. Research should further investigate the types of HCAs used by institutions and the academic preparedness of applicants upon admissions to their pre-licensure program of nursing education. Additionally, researchers could determine what HCAs were used and what were the levels of academic preparedness, upon admissions to their pre-licensure program of nursing education, of individual nurses with disciplinary actions rendered against their licenses. Additionally, it should be determined if there is any correlation between HCAs, the levels of institutional selectivity, and institutional attrition rates (specifically academic failures or withdrawals). The correlation of institutional selectivity to the first-time NCLEX-RN pass rates should also be considered. Finally, it would also be of

value to determine if students in the higher education pipeline whose academic preparedness lies in the upper quartile, as determined by their HCAIs, have ever considered nursing as a profession or if modest levels of selectivity have in any way deterred their decision in their selection of nursing as a career.

5.2 SUMMARY

According to Muller, “in modern societies stratification by ascription is increasingly replaced through stratification by achievement, and that education plays a crucial role in this transformation” (Muller et al., 1989, p. 5). The study highlighted the HCAIs included in admission requirements pre-licensure nursing programs. By a large majority, these criteria did not present standards reflective of high selectivity or a need for high levels of academic preparedness.

Additionally, the existence of pre-licensure programs of nursing education in occupational schools (i.e., hospital-based diploma schools) and in community colleges (i.e., associate’s degree programs) have strong missions of workforce development and vocational education. These non-four year institutions convey a message to the public that the knowledge base necessary for the practice of nursing is that of an occupational nature, and as such, the non-baccalaureate programs cannot command high expectations for academic preparedness. Education is “often treated as a proxy for human capital or labor market position” (DiMaggio & Mohr, 1985, p. 1232). Measures of academic preparedness are proxies reflective of habitus, and an assessment of the proxy measures used by pre-licensure programs of nursing education may

provide a basis by which to explain the differences in nurses as related to pre-licensure program type.

The lack of equivalent categorization of pre-licensure programs of nursing education impedes the trajectory of a cohesive educational process, a unified format of education, and increased levels of selectivity for academic preparedness that is necessary for any profession in the 21st century. The establishment of uniformity and increased selectivity in admissions criteria for pre-licensure education could increase the attractiveness of the profession by raising the qualities of the human capital stock, both in terms of academic preparedness as well as in terms of a more positive habitus. However, the results of this study indicated that uniformity and cohesiveness in the nursing admissions process is absent, levels of highly selective HCAIs are sparse, and lower levels of selectivity exist. Most HCAIs required for pre-licensure programs of nursing education in Pennsylvania are of modestly average selectivity, such as the most frequently identified SAT score of 1000, which lies in the 60th percentile rank.

Studies have revealed that better prepared students lie in the upper quartile for HCAIs. Based on the findings of this study, the levels of selectivity for many nursing preparation programs, especially for AD and HBDPL programs, need to be improved. More research is needed regarding the far-reaching impact of academic selectivity in the admissions processes for pre-licensure programs for nursing education.

APPENDIX A

PA CODE SECTION § 21.101 – SELECTION AND ADMISSION STANDARDS

(a) Policies and procedures related to the selection and admission of students are the responsibility of the individual school. Consideration shall be given to scholastic aptitude, academic achievement, personal qualities and physical and emotional health necessary to fulfill the objectives of the program.

(b) Students admitted to baccalaureate and associate degree programs shall meet the requirements for admission to the university or college and additional requirements that may be established for the nursing major.

(c) Applicants shall have completed work equal to a standard high school course with a minimum of 16 units, including 4 units of English, 3 units of Social Studies, 2 units of Mathematics (1 of which is Algebra) and 2 units of Science with a related laboratory or the equivalent.

Source

The provisions of this § 21.101 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (30261).

APPENDIX B

PA CODE SECTION § 21.81 – CURRICULUM FOR BACCALAUREATE, ASSOCIATE DEGREE, AND DIPLOMA PROGRAMS

§ 21.81. General curriculum requirements.

(a) The curriculum shall be developed, implemented and evaluated by the faculty and shall implement the philosophy and objectives of the school.

(b) The curriculum shall be organized and developed to include the knowledge, attitudes, skills and abilities necessary for the specific levels of student achievement.

(c) Physical and biological sciences shall include content from the areas of anatomy and physiology, chemistry, microbiology, physics and nutrition, which may be integrated, combined or presented as separate courses; the scientific facts and principles drawn from these areas serve as a basis for planning and implementing nursing care. When the basic sciences are presented as distinct academic courses—that is, chemistry, anatomy and physiology and microbiology—there shall be a related laboratory experience. A related laboratory experience is defined as an assigned period of time during which students participate in the testing of scientific principles.

(d) Selected courses shall be included in the humanities and social and behavioral sciences that support the philosophy, purposes, educational concepts and terminal objectives of the program.

(e) The curriculum shall provide concurrent theory and clinical experience in the care of men, women and children in age groups and with the health problems characteristic of each group. Experiences shall be provided which include preventive aspects of nursing care during acute and chronic illness and rehabilitative care. Opportunities shall be provided for the student to participate in case findings, health teaching and health counseling for patients and their families. Evening and night assignments are considered part of the curriculum only in terms of the objectives to be achieved and if faculty supervision is provided.

(f) Content related to history, trends and professional responsibilities of nursing may be integrated, combined or taught as separate courses.

(g) The Board encourages curriculum experimentation designed to replicate or validate educational theories or to promote open-ended career development.

Authority

The provisions of this § 21.81 issued under section 506 of The Administrative Code of 1929 (71 P. S. § 186).

Source

The provisions of this § 21.81 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended June 12, 1980, effective June 14, 1980, 10 Pa.B. 2404; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (34224) and (50845).

§ 21.82. Curriculum evaluation.

The curriculum shall be evaluated according to a plan developed by the faculty and shall include the following:

- (1) Careful review of aspects of the educational program based on the stated philosophy and objectives.
- (2) Continuous evaluation of instructional procedures, learning experiences and student progress.
- (3) Opportunities for students to participate in self-evaluation of their own learning experiences.
- (4) Performance of graduates on the licensing examination.
- (5) Opinions of graduates regarding the adequacy of their nursing program.
- (6) Evaluation of graduates by their employers.
- (7) Record system in operation which will assist in the evaluation of the educational program.

Source

The provisions of this § 21.82 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677. Immediately preceding text appears at serial page (9707).

§ 21.83. Curriculum changes requiring Board approval.

(a) Major curriculum changes that require Board approval include:

(1) Alteration of the program philosophy, purposes and objectives which influences or affects the integration of material into the total curriculum, such as changes in course content or instruction, shifting content, changing course placement, adding or deleting courses, changing the length of a course or the program and changing the allotment.

(2) Reorganization of the entire curriculum.

(3) Changes in clinical facilities involving contractual agreements.

(b) When a program change is contemplated, a plan shall be presented to the Board showing:

(1) Rationale for the change.

(2) Present program.

(3) Proposed changed program.

(4) Philosophy and objectives of the proposed program.

(5) Old and new master rotation or organizational curriculum plans.

(6) The school bulletin and other pertinent information.

(c) Fifteen copies of the materials listed in subsection (b) shall be submitted to the Board at least 3 weeks prior to the Board meetings at which the matters are considered.

Source

The provisions of this § 21.83 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended January 18, 1980, effective January 19, 1980, 10 Pa.B. 217; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (50846) to (50847).

§ 21.84. Baccalaureate curriculum philosophy; purposes and objectives.

(a) A clear statement of philosophy and purposes of the baccalaureate nursing program, consistent with the philosophy and purposes of the controlling institution, shall be formulated and adopted.

(b) The philosophy, purposes and objectives of the educational unit in nursing shall be developed and clearly stated by the faculty and shall be reviewed and revised at stated time intervals by this group.

(c) The philosophy and purposes of the educational unit in nursing shall be consistent with currently accepted social, educational and nursing standards.

(d) The objectives of the nursing program shall be consistent with the purposes of the educational unit.

(e) The terminal objectives of the program shall identify behavioral changes that are expected to occur in the student.

Source

The provisions of this § 21.84 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (50847) and (30257).

§ 21.85. Baccalaureate general educational criteria.

(a) The educational policies of the educational unit in nursing shall be consistent with those of the controlling institution.

(b) The curriculum shall reflect the philosophy and purposes of the educational unit in nursing and shall implement the objectives of the program.

(c) There shall be an educational rationale for the selection and distribution of courses and for the selection of theoretical and clinical laboratory content in nursing courses.

(d) The rationale for the allocation of credit for nursing courses shall be consistent with the practice of the institution.

(e) The courses shall be planned on the academic term basis common to the institution.

(f) The learning experiences and methods of instruction shall provide opportunity for fulfilling the purposes of the educational unit in nursing and the objectives of the program.

(g) Learning experiences and methods that promote critical thinking and synthesis of learning shall be utilized in the teaching-learning process.

(h) Consideration shall be given to individual differences among students.

(i) The program shall build its professional education on a general education basis.

(j) Courses in general education shall be shared with students in other disciplines of the controlling institution.

(k) Provision shall be made for students to take electives in upper divisional general education courses.

(l) Nursing courses shall be organized to use and reinforce relevant learnings from preceding and concurrent nursing courses.

(m) Education in the nursing major shall be offered largely at the upper divisional level.

(n) Nursing courses and curriculum shall be organized to continue the development of values, understandings, knowledge and skills needed in all aspects of professional nursing.

(o) Preparation insuring professional nursing competencies shall be provided through selected and supervised learning experiences.

(p) The ratio of credits in nursing, that is, the major field of study, general education and elective credits shall be consistent with the nature, purposes and requirements of the parent institution.

(q) The ratio of students to faculty shall assure optimal learning opportunities in clinical laboratory sessions and shall be consistent with the objectives of the clinical nursing courses.

(r) The curriculum for baccalaureate nursing programs shall give evidence of providing learning experiences which will prepare graduates for professional nursing practice. The standards of practice are defined and delineated by the nursing profession.

(s) Course syllabi that identify all aspects of each course shall be developed and readily available.

Source

The provisions of this § 21.85 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (30257) to (30258).

§ 21.86. Associate degree curriculum philosophy; purposes and objectives.

(a) A clear statement of philosophy and purposes of the associate degree program in nursing, consistent with the philosophy and purposes of associate degree education and with the controlling institution, shall be formulated and adopted.

(b) The philosophy, purposes and objectives of the educational unit in nursing shall be developed and clearly stated by the faculty and shall be reviewed and revised at stated time intervals by this group.

(c) The philosophy and purposes of the educational unit in nursing shall be consistent with currently accepted social, associate degree education and nursing standards.

(d) The objective of the nursing program shall be consistent with the purposes of the educational unit.

(e) The terminal objectives of the program shall identify behavioral changes that are expected to occur in the student.

Source

The provisions of this § 21.86 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial page (30258).

§ 21.87. Associate degree general educational criteria.

(a) The educational policies of the educational unit in nursing shall be consistent with those of the controlling institution.

(b) The curriculum shall reflect the philosophy and purposes of the educational unit in nursing and shall implement the objectives of the program.

(c) There shall be an education rationale for the selection and distribution of courses and for the selection of theoretical and clinical laboratory content in nursing courses.

(d) The rationale for the allocation of credit for nursing courses shall be consistent with the practice of the institution.

(e) The courses shall be planned on the academic term basis common to the institution.

(f) The learning experiences and methods of instruction shall provide opportunity for fulfilling the purposes of the educational unit in nursing and the objectives of the program.

(g) The nursing curriculum shall demonstrate the accepted pattern of development for associate degree education and be consistent with college policy.

(h) Courses in general education shall be shared with students in other programs of the controlling institution.

(i) Nursing courses shall be organized to use and reinforce relevant learnings from preceding and concurrent courses.

(j) Preparation insuring associate degree nursing competencies shall be provided through selected and supervised learning experiences.

(k) The ratio of credits in nursing to general education and elective credits shall be consistent with other associate degree programs in the college.

(l) The ratio of students to faculty shall assure optional learning opportunities in clinical laboratory sessions and shall be consistent with the objectives of the clinical nursing courses.

(m) The curriculum for associate degree nursing programs shall give evidence of providing learning experiences which will prepare graduates for associate degree nursing practice as defined and delineated by the nursing profession.

(n) Course syllabi that identify all aspects of each course shall be developed and readily available.

Source

The provisions of this § 21.87 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (30258) to (30259).

§ 21.88. Diploma curriculum philosophy; purposes, and objectives.

(a) A clear statement of philosophy, purposes and objectives consistent with the philosophy and objectives of the governing body shall be formulated and adopted.

(b) The philosophy, purposes and objectives of the school shall be developed by the faculty and reviewed at stated intervals.

(c) The philosophy of the school shall express beliefs about education, nursing and the responsibility of the school to the student.

(d) The terminal objectives of the school shall identify behavioral changes that are expected to occur in the student.

Source

The provisions of this § 21.88 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677; amended September 16, 1983, effective September 17, 1983, 13 Pa.B. 2829. Immediately preceding text appears at serial pages (30259) to (30260).

§ 21.89. Diploma general education criteria.

(a) The selection of learning experiences and methods of instruction shall provide opportunities for fulfilling the stated objectives of the program of studies or of the curriculum.

(b) Each school year shall be divided into specific time periods.

(c) The curriculum shall be planned in a sequence so that each course utilizes and strengthens the preceding and concurrent courses.

(d) Theory and practice shall be offered concurrently and be so planned that demands on the student within each time period are comparable.

(e) Course outlines that identify all aspects of each course shall be developed and readily available.

(f) The ratio of students to faculty shall assure optional learning opportunities in the clinical sessions and shall be consistent with the objectives of the clinical nursing course.

Source

The provisions of this § 21.89 amended October 22, 1976, effective October 23, 1976, 6 Pa.B. 2677. Immediately preceding text appears at serial page (9712).

APPENDIX C

BARRON'S MEASURE OF SELECTIVITY

Table C.1 Barron's Measure of Selectivity

Category and Examples of Institutions	High School Rank	High School GPA	Median SAT Scores	Median ACT Scores	Percentage of Applicants Admitted
Most Competitive (e.g., Carnegie Mellon University, Case Western, Massachusetts Institute of Technology, University of Pennsylvania)	Top 10- 20%	A to B+	655-800	29 and above	Usually less than 33%
Highly Competitive (e.g., University of Pittsburgh (Main Campus), Allegheny College, Grove City College)	Top 20%	B+ to B	620-657	27 or 28	Fewer than 25%

Table C.1 (continued)

Very Competitive (e.g., Drexel University, Duquesne University, The Pennsylvania State University (Main Campus), St. Vincent College)	Top 35-50%	No less than B-	573-619 (Some colleges in this category have medians of 610 or above)	24-26 (Some colleges in this category have medians of 26 or above)	Accept 50-75% (Some colleges in this category accept fewer than 33% of applicants)
Competitive (e.g., California University of Pennsylvania, Carlow University, Chatham University, Clarion, La Roche College)	Top 50% to 60%	B- or better; some may accept C+ or C	500-572 (Some colleges in this category have medians of 563 or above)	21-23 (Some colleges in this category have medians of 24 or above)	Accept 75-85% (Some colleges in this category accept less than 50% of applicants)
Less Competitive (e.g., Robert Morris University, Slippery Rock University)	Top 65%	Generally C or below	Generally less than 500	Generally less than 21	85% or more
Noncompetitive	“These colleges in this category generally only require evidence of graduation from an accredited high school (although they may require completion of a certain number of high school units). Some require that entrance examinations be taken for placement purposes only, or only by graduates of unaccredited high schools or only by out-of-state students. In some cases, insufficient capacity may compel a college in this category to limit the number of students that are accepted; generally, however, if a college accepts 98% or more of its applicants, it automatically falls into this category. Colleges are also rated Noncompetitive [sic] if they admit all state residents, but have some requirements for nonresidents” (p. 259)				

Note. Values based upon the 2009-2010 freshman class. Information from Barron’s Educational Series (2010).

APPENDIX D

COMPARISON OF ACADEMIC PREPAREDNESS GUIDELINES

Table D.1 Comparison of Academic Preparedness Guidelines

	From <i>A Nation at Risk</i> , as cited in Horn & Kojaku (2001)			Pa. Code § 21.81
	Core Curriculum	Mid-level Curriculum (Includes Core Curriculum plus additional)	Rigorous Curriculum (Includes Mid-level Curriculum plus additional)	Nursing
English	4 years	4 years	4 years	4 years
Math	3 years	4 years (including a minimum of algebra I and geometry)	4 years (including pre-calculus or higher)	2 years (including algebra I)
Science	3 years	3 years	3 years (including biology, chemistry, or physics)	2 years (including “a related lab or equivalent”)
Social Studies	3 years	3 years	3 years	3 years
Foreign Language		1 year	3 years	
AP Course			Must take at least one	

APPENDIX E

2004 REGISTERED NURSE POPULATION

Table E.1 2004 Registered Nurse Population

Gender, Racial/ethnic Background, and Age Group	Number in Sample	Total Estimated		Employment Status					
		Number	Percent	Employed in Nursing			Not Employed in Nursing		
				Number	Percent	Estimated	Number	Percent	Estimated
Total	33,635	2,909,357	100.0	30,233	2,421,351	100.0	5,402	488,006	100.0
Gender									
Male	2,166	168,181	5.8	1,937	148,642	6.1	229	19,539	4.0
Female	33,454	2,740,144	94.2	28,283	2,271,717	93.8	5,171	468,427	96.0
Not Known	15	1,033	0.0	13	993	0.0	2	40	0.0
Racial/Ethnic Background									
White (non-Hispanic)	29,561	2,380,529	81.8	24,958	1,966,330	81.2	4,603	414,199	84.9
Black/African American (non-Hispanic)	1,297	122,495	4.2	1,146	106,644	4.4	151	15,850	3.2
Asian (non-Hispanic)	963	84,383	2.9	863	75,943	3.1	100	8,440	1.7

Table E.1 (continued)

Native Hawaiian/Pacific Islander (non-Hispanic)	65	5,594	0.2	55	4,613	0.2	10	981	0.2
American Indian/Alaska Native (non-Hispania)	157	94,53	0.3	141	8,347	0.3	16	1,106	0.2
Hispanic/Latino (any race)	512	48,009	1.7	450	42,262	1.7	62	5,747	1.2
Two or more races (non-Hispanic)	519	41,244	1.4	451	35,554	1.5	68	5,690	1.2
Not Known	2,561	217,651	7.5	2,168	181,658	7.5	392	35,993	7.4
Age Group									
Less than 25	609	61,778	2.1	558	59,592	2.5	21	2,186	0.4
25-29	2,117	171,659	5.9	1,981	159,676	6.6	136	11,983	2.5
30-34	3,053	243,182	8.4	2,794	221,052	9.1	259	22,130	4.5
35-39	3,646	289,525	10.0	3,280	526,967	10.6	366	32,557	6.7
40-44	4,996	408,248	14.0	4,481	360,249	14.9	515	47,999	9.8
45-49	6,407	508,708	17.5	5,718	449,797	18.6	689	58,910	12.1
50-54	5,816	463,565	15.9	5,160	406,748	16.8	656	56,817	11.6
55-59	4,099	338,078	11.6	3,361	271,264	11.25	738	66,814	13.7
60-64	2,477	210,196	7.2	1,667	136,191	5.6	810	74,006	15.2
65 and Over	2,085	185,254	6.4	928	75,305	3.1	1,157	109,949	22.5
Not Known	330	29,165	1.0	275	24,511	1.0	55	4,655	1.0
Average Age		46.8			45.4			54.1	
Median Age		47.0			46.0			55.0	

Note. Estimated numbers may not equal totals, and percentages may not add to 100 because of rounding. Table reproduced from U.S. Department of Health and Human Services (2006, p. A-1)

APPENDIX F

THE ANA STATEMENT OF PURPOSE

“The American Nurses Association (ANA) is the only full-service professional organization representing the nation's entire registered nurse population. From the halls of Congress and federal agencies to the board rooms, hospitals and other health care facilities, ANA is the strongest voice for the nursing profession. It is headquartered in Silver Spring, Maryland.

ANA represents the interests of the nation's 3.1 million registered nurses through its constituent and state nurses associations and its organizational affiliates.

Dedicated to ensuring that an adequate supply of highly-skilled and well-educated nurses is available, ANA is committed to meeting the needs of nurses as well as health care consumers. ANA advances the nursing profession by fostering high standards of nursing practice, promoting the economic and general welfare of nurses in the workplace, projecting a positive and realistic view of nursing, and by lobbying the Congress and regulatory agencies on health care issues affecting nurses and the general public.

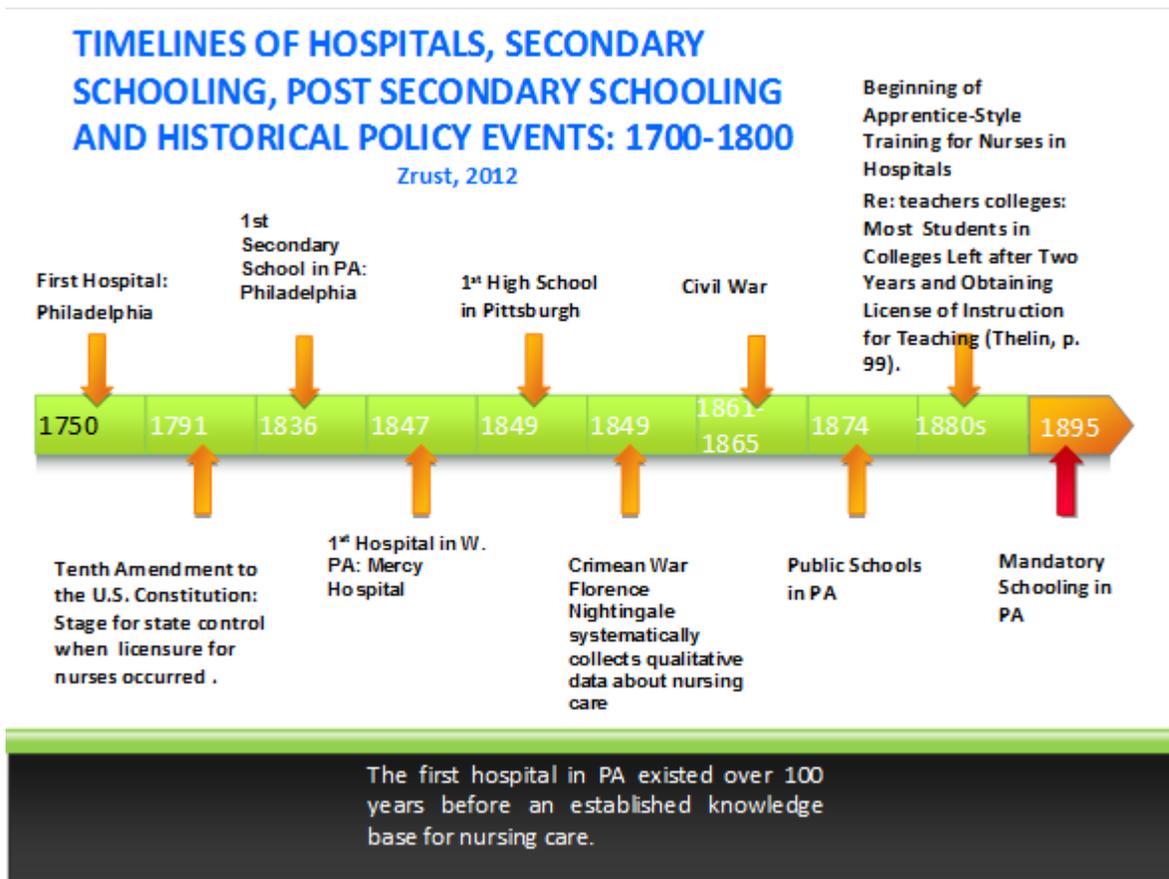
ANA is at the forefront of policy initiatives pertaining to health care reform. Among the priority issues are: a restructured health care system that delivers primary health care in community based settings; an expanded role for registered nurses and advanced practice nurses

in the delivery of basic and primary health care; obtaining federal funding for nurse education and training; and helping to change and improve the health care environment.

Through ANA's political and legislative program, the association has taken firm positions on a range of issues including Medicare reform, patients' rights, appropriate staffing, the importance of safer needle devices, whistleblower protections for health care workers, adequate reimbursement for health care services and access to health care. ANA and its state nurses associations' lobbying efforts are contributing to health care reform on both state and national levels." (ANA, 2013)

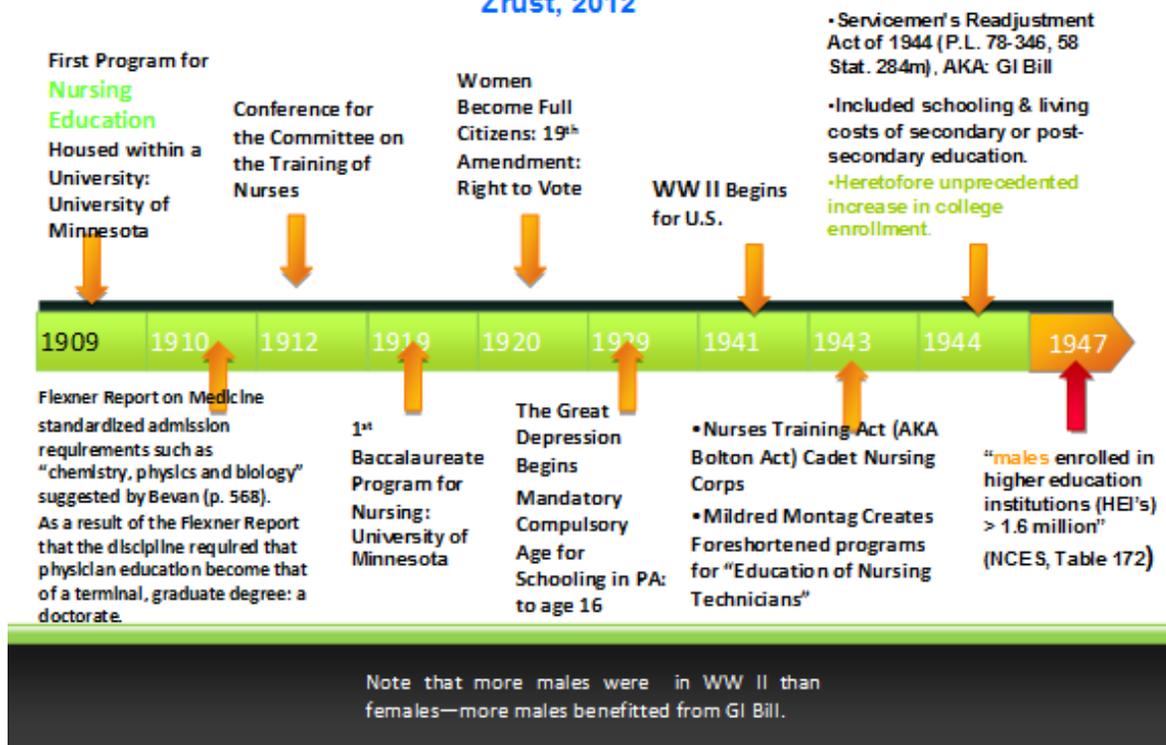
APPENDIX G

TIMELINE OF SIGNIFICANT EVENTS IN NURSING HISTORY

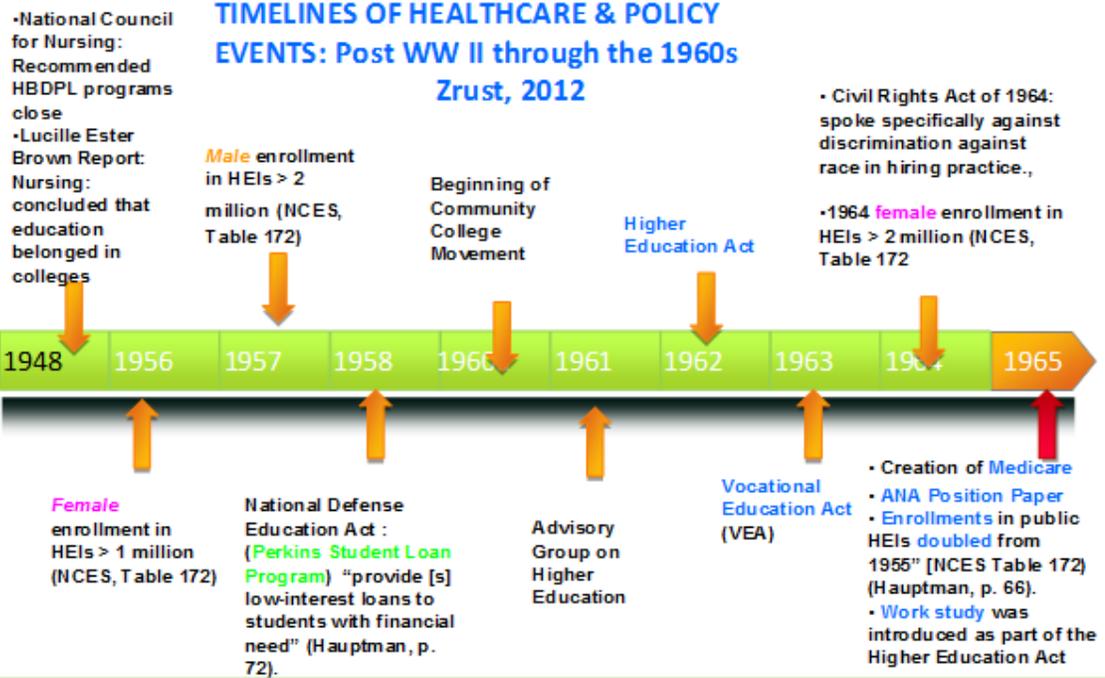


TIMELINES OF HOSPITALS, SECONDARY SCHOOLING, POST SECONDARY SCHOOLING AND HISTORICAL POLICY EVENTS:1900-1950

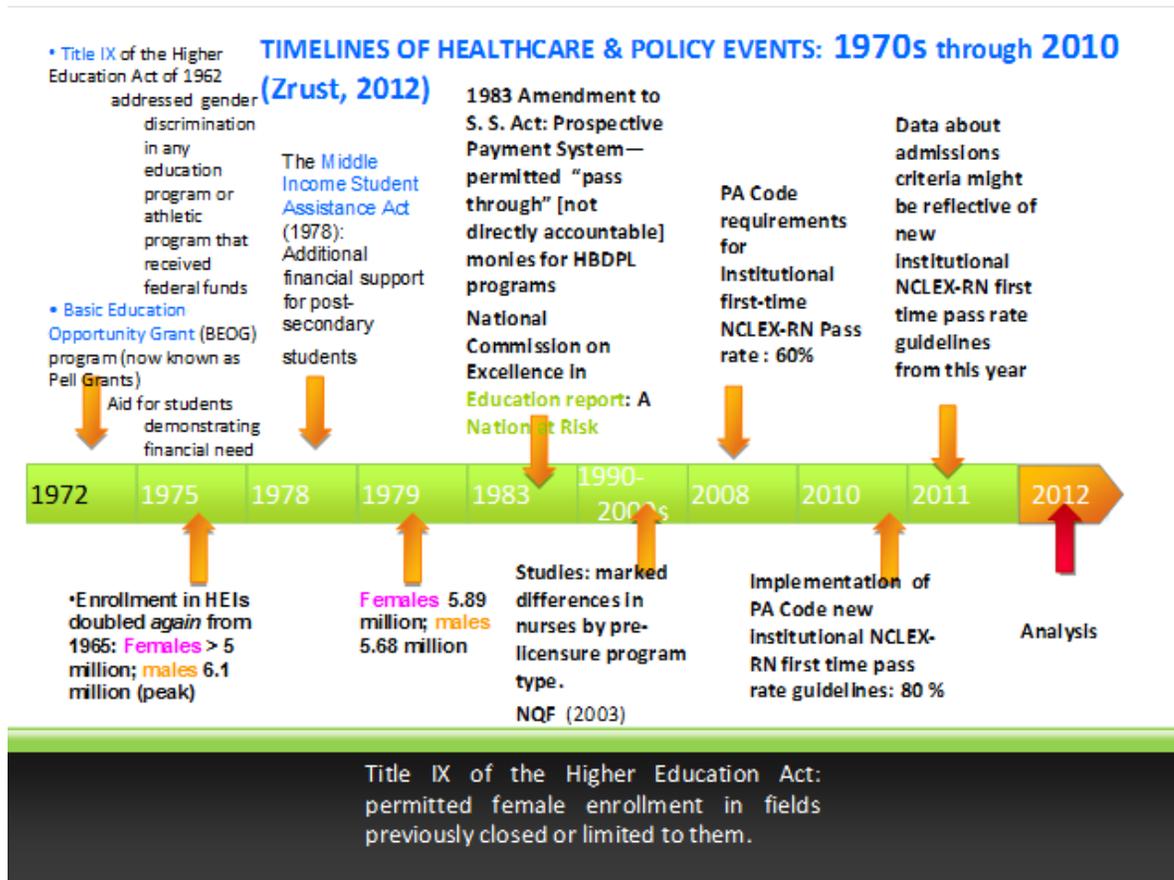
Zrust, 2012



TIMELINES OF HEALTHCARE & POLICY EVENTS: Post WW II through the 1960s Zrust, 2012



Remember, males reached 1.6 million in HEIs in 1947



(Reproduced from U.S. Department of Health and Human Services, 2006)

Figure H.1 Actual and Real Earnings for Registered Nurses: 1980 to 2004

APPENDIX H

ACADEMIC ADMISSIONS CRITERIA AND KEY RESEARCH FINDINGS

In an attempt to make the data more accessible to the reader, the author has constructed tables outlining the major research findings regarding the SAT I, SAT II, SAT Writing Test, ACT, high school grade point average (HSGPA), and COMPASS. Each table provides a general description of the HCAI and indicates seminal research findings. As applicable, each of the following tables includes research surrounding one of these HCAI indicators as conducted by Camara and Echternacht (2000); Geiser and Studley (2002); Habley and McClanahan (2004); Linn (1990); Noble and Sawyer (2002); Robbins, Allen, Casillas, Peterson, and Le (2006); and/or Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004).

Table H.1 SAT I and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the SAT I
General Description	Aptitude test measuring general ability in academics (Linn, 1990)
Camara and Echternacht (2000)	<p>The mean SAT verbal or math score for highly selective colleges was 650. The range of scores was 300 to 800; however, most scores were above 500.</p> <p>Mean score for a national cohort of college-bound seniors was 500 with a typical bell curve distribution ranging from 200 to 800.</p> <p>The ranges of “admission test scores and high school grades of the students attending a specific college is typically much narrower than the range of test scores or grades submitted by the larger applicant pool for the college” (p. 1).</p> <p>The SAT I “added substantially to the prediction” of college success (p. 4).</p>
Geiser and Studley (2002)	<p>SAT I score has a correlation of 0.6 to an individual’s HSGPA (p.6).</p> <p>SAT I test determines “students’ capacity for future learning” (p. 1).</p> <p>Regarding predictive weight, for admissions the “SAT I ranks a distant third in each year, and for the polled four-year data” (p. 6).</p>
Habley and McClanahan (2004)	<p>Lower standardized test scores reflect “inadequate preparation for college, and poor study skills” (Habley & McClanahan, 2004, p. 6)</p>
Linn (1990)	N/A
Noble and Sawyer (2002)	Reported findings similar to Camara and Echternacht (2000)
Robbins, Allen, Casillas, Peterson, and Le (2006)	N/A
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	N/A

Table H.2 SAT II and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the SAT II
General Description	Achievement test designed for specific content; “intended to measure achievement in specific subject matter corresponding to high school or college level work” (Linn, 1990, p. 299)
Camara and Echternacht (2000)	N/A
Geiser and Studley (2002)	“SAT II scores were the single best predictor of the UCGPA in two of the four years studied (1998 and 1999), and also the single best predictor for the pooled, four-year data” (p. 5).
Habley and McClanahan (2004)	SAT II follows closely behind HSGPA in terms of predictive weight for admissions N/A
Linn (1990)	Many of the selective colleges require scores from SAT II subject achievement tests.
Noble and Sawyer (2002)	N/A
Robbins, Allen, Casillas, Peterson, and Le (2006)	N/A
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	N/A

Table H.3 SAT Writing and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the SAT Writing
General Description	Assesses the students' ability to "do the kind of writing required in most college courses—writing that emphasizes precise use of language, logical presentation of ideas, development of a point of view, and clarity of expression" (Kobrin & Kimmel, 2006, p. 2).
Camara and Echternacht (2000)	N/A
Geiser and Studley (2002)	N/A
Habley and McClanahan (2004)	N/A
Linn (1990)	N/A
Noble and Sawyer (2002)	N/A
Robbins, Allen, Casillas, Peterson, and Le (2006)	N/A
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	N/A

Table H.4 ACT and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the ACT
General Description	Aptitude test measuring general ability in academics (Linn, 1990)
Camara and Echternacht (2000)	N/A
Geiser and Studley (2002)	N/A
Habley and McClanahan (2004)	N/A
Linn (1990)	N/A
Noble and Sawyer (2002)	<p>“A student with an ACT-C score of 21 (the approximate median mean ACT score across the 84 institutions [used in the study]) would typically have a 0.81 probability of earning a 2.0 GPA or higher. The corresponding probabilities for the other criterion levels would be 0.62 (2.5), 0.36 (3.0), 0.20 (3.25), 0.11 (3.5), and 0.04 (3.75), respectively” (p.10).</p>
Robbins, Allen, Casillas, Peterson, and Le (2006)	<p>Median composite ACT score of 21 demonstrates a progressively decreasing probability to predict increasingly higher GPAs.</p> <p>Mean ACT-C scores for four-year institutions was 21.47 (SD=4.48) and for two-year institutions 18.99 (SD=3.91). ATC-C has strong correlation to college GPA for both first semester (0.41) and first year (0.46), but not as strong as the correlation of HSGPA.</p> <p>Mean ACT-Math scores for four-year institutions was 20.61(SD=4.77) and for two-year institutions 18.18 (SD=3.83).</p> <p>Mean ACT-English score for four-year institutions was 20.96 (SD=5.25) and for two-year institutions 17.82 (SD=4.71). ATC-English scores were the strongest predictors of success (i.e., B grade or higher) in college level English: Odds Ratio= 1.65; $p < .001$; for four-year institutions, as well as for two-year institutions Odds Ratio= 2.10; $p < .001$</p>
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	N/A

Table H.5 High School Grade Point Average (HSGPA) and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding HSGPA
General Description	High school grade point average
Camara and Echternacht (2000)	N/A
Geiser and Studley (2002)	<p>“HSGPA has the most predictive weight followed closely by SAT II composite scores” (p. 6).</p> <p>HSGPA exerts a strong correlation for academic success over the SAT I for all four years of the study, and also that HSGPA is a better criterion for the correlation of success for the first two years of college than the SAT II.</p> <p>When adjusting for the academic rigor of varying high schools of origin, divided into quintiles, HSGPA is more predictive of college success than even the SAT II.</p> <p>HSGPA was a better predictor than the SAT I or the SAT II of student performance for the majors of general/undeclared; social sciences/humanities, and biological sciences.</p>
Habley and McClanahan (2004)	Lower HSGPAs and standardized test scores reflect “inadequate preparation for college, and poor study skills” (p. 6)
Linn (1990)	The high school record is “typically the single best predictor” of freshman GPA (p. 304).
Noble and Sawyer (2002)	A student with a high HSGPA would do well in college, irrespective of a standardized test score.
Robbins, Allen, Casillas, Peterson, and Le (2006)	<p>Mean HSGPA for four-year institutions was 3.21 (SD=0.55) and for two-year institutions 2.68 (SD=0.66).</p> <p>HSGPA has strong overall correlation to college GPA for both first semester (0.45) and first year (0.49), which is stronger relationship than ATC-C score.</p> <p>HSGPA correlation differs for two year institutions both first semester GPA (0.31) and first year GPA (0.31), stronger than COMPASS score.</p> <p>HSGPA second-best predictor of success in college level English composition (noted as a grade of B or higher: Odds Ratio= 1.63; $p < .001$ for four-year institutions, as well as for two-year institutions: Odds Ratio= 1.78; $p < .001$).</p>
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	<p>HSGPA is twice as likely to predict retention as ACT or Sat scores ($r^2 = .239$ and $.121$, and also $p < .001$ [mean operational validity] (.240 and $.121$) respectively).</p> <p>HSGPA is more likely to predict college freshman level GPA with identical values for r^2 $p < .001$ at $.413$ and $.369$, respectively.</p> <p>“The most widespread performance measure” that is used (p. 262).</p>

Table H.6 COMPASS and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding COMPASS
General Description of Assessment	<p data-bbox="772 386 1906 459">“A computer-based course placement service used primarily in the 2-year postsecondary market, with over 15 million tests administered annually” (Robbins et al., 2006, p. 601).</p> <p data-bbox="772 500 1864 605">Test does not consist of composite scores. Robbins, et al.(2006) <i>created a composite score</i> by adding scores from the writing and pre-algebra or algebra (if available) components; known as a “pseudocomposite score” (p. 604).</p>
Camara and Echternacht (2000)	Not used by four-year institutions.
Geiser and Studley (2002)	N/A
Habley and McClanahan (2004)	N/A
Linn (1990)	N/A
Noble and Sawyer (2002)	N/A
Robbins, Allen, Casillas, Peterson, and Le (2006)	<p data-bbox="772 859 1801 984">Writing section mean score of 60.18 (<i>SD</i>= 28.25); mean pre-algebra score 44.07 (<i>SD</i>=20.28).</p>
Robbins, Lauver, Le, Davis, Langley, and Carlstrom (2004)	<p data-bbox="772 1019 1917 1092">COMPASS correlation for two-year institutions’ first semester GPA (0.25) and first year GPA (0. .27). Not as strong of a correlation as HSGPA.</p> <p data-bbox="772 1101 835 1133">N/A</p>

APPENDIX I

MEASURES OF NURSING-SPECIFIC ADMISSIONS CRITERIA AND KEY RESEARCH FINDINGS

In an attempt to make the data more accessible to the reader, the author has constructed tables outlining the major research findings regarding the pre-admission or course-specific GPA, CNET-RN, COMPASS, DET, NLN PAX, PSB-RN, RNEE, and TEAS. Each table provides a general description of the HCAI and indicates seminal research findings. As applicable, each of the following tables includes research surrounding one of these HCAI indicators as conducted by Landry, Davis, Alameida, Prive, and Renwanz-Boyle (2010); Byrd, Garza, and Nieswiadomy (1999); Gallagher, Bomba, and Crane (2001); Newton, Smith, and Moore (2007); Newton, Smith, Moore, and Magnan (2007); Robbins, Allen, Casillas, Peterson, and Le (2006); Seldomridge and DiBartolo (2004); and Symes, Tart, and Travis (2005)

Table I.1 Pre-Admission or Course-Specific GPA and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding Pre-Admission or Course-Specific GPA
Description of Admissions Criteria	N/A
Landry et al. (2010)	There was a positive association to the grade earned in the pathophysiology course and academic success.
Byrd et al. (1999)	Grades in core courses, nursing GPA and college GPA were associated with NCLEX-RN success. Pre-nursing GPA, along with ethnicity (White) and science GPA (biological science, social science and chemistry), was “successfully predictive of graduation in 77% of the cases” (p.36).
Gallagher et al. (2001)	White ethnicity was related to a higher GPA. N/A
Newton et al. (2007)	GPA in the pre-nursing classes for the fall cohort was the most predictive of success.
Newton et al. (2007)	In a baccalaureate program, preadmission GPA ($\beta = .394$; $p < .001$) was the more important predictor of first-semester GPA than was TEAS score ($\beta = .227$; $p < .001$)” (p. 146).
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	“For each letter grade increase in Pathophysiology, the odds of passing the NCLEX-RN improved by nearly 5 times” (p. 364).
Symes et al. (2005)	N/A

Table I.2 CNET-RN and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the CNET-RN
Description of Admissions Criteria	<p>Created by the Center for Nursing Education and Testing Inc. (C-NET), this test consists of 125 items on language and numerical ability. The language component is further divided into reading comprehension, reasoning ability, critical thinking, word analogies and sentence completion. The numerical ability portion is comprised of basic operations, data interpretation, applied mathematics, and algebra. There is an optional science test that equally tests on the three content areas of biology, chemistry and physics (Pre-nursing Assessment Test –RN Blueprint, n.d.)</p>
Landry et al. (2010)	<p>Given the operational definition of the C-NET, and its indication that it tests for more basic knowledge than required of a college applicant, it may be concluded, that scores on a C-NET exam are difficult to compare to an ACT or SAT score.</p>
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	<p>The CNET did not significantly differentiate the successful student from the unsuccessful student.</p>
Newton et al. (2007)	N/A
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	<p>Students who scored less than 55% in reading comprehension were placed in a newly developed five-semester program aimed at improved retention.</p>
	<p>Students scoring at or above 55% were enrolled in the traditional four semester upper level program.</p>

Table I.3 COMPASS and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the COMPASS
Description of Admissions Criteria	<p data-bbox="772 386 1906 492">“A computer-based course placement service used primarily in the 2-year postsecondary market [bold; italics added], with over 15 million tests administered annually” (Robbins, et al., 2006, p. 601).</p> <p data-bbox="772 532 1860 638">Test does not consist of composite scores. Robbins, et al.(2006) created a composite score by adding scores from the writing and pre-algebra or algebra (if available) components; known as a “pseudocomposite score” (p. 604).</p> <p data-bbox="772 678 1213 711">Not used by four-year institutions.</p>
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	N/A
Newton et al. (2007)	N/A
Robbins et al. (2006)	Writing section mean score of 60.18 (SD= 28.25); mean pre-algebra score 44.07 (SD=20.28).
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	N/A

Table I.4 DET and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the DET
Description of Admissions Criteria	The Diagnostic Entrance Test (DET), developed by the Arnett Development Corporation, is an entrance exam for the Nursing Program. “The main purpose of this entrance exam is to determine an individual student’s knowledge level in a variety of content areas that have proven to be useful in Nursing and Allied Health Programs. The DET is divided into two major areas: English and Math” (CPAT-DET, n. d.). The Arnett Corporation’s website does not reveal information regarding the scoring process or validity or reliability
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	N/A
Newton et al. (2007)	N/A
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	N/A

Table I.5 NLN-PAX and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the NLN-PAX
Description of Admissions Criteria	The National League for Nursing Pre-Admission Examination (NLN-PAX) is a standardized entrance exam for potential nursing students who seek admittance into nursing schools nationwide” ...The NLN PAX RN and PN comprises three main areas: verbal skills, which consists of both word knowledge and reading comprehension, mathematics, which includes basic calculations, word problems, and incorporates algebra, geometry, conversions, graphs, and applied mathematics; and science, which examines general biology, chemistry, physics, and earth science. The NLN PAX-PN includes the above content as well as a section on health and first aid (About the NLN Pre-Admission Exam (PAX), n.d.).
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	N/A
Newton et al. (2007)	N/A
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004).	N/A
Symes et al. (2005)	N/A

Table I.6 PSB-RN and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the PSB-RN
Description of Admissions Criteria	<p>PSB's Registered Nursing School Aptitude Examination documents the educational achievements necessary for the professional nursing preparation program. It comprises five separate tests that measure abilities, skills, knowledge, and attitudes important for success in the program and career choice and can predict an individual's readiness and capability for successful completion of the educational program designed to prepare the qualified professional nurse. The PSB Registered Nursing School Aptitude Examination, although developed to measure readiness for instruction in professional nursing, can also be used for other purposes such as placement, counseling, and curriculum planning (Registered Nursing School Aptitude Examination, n.d.).</p>
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	N/A
Newton et al. (2007)	N/A
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	N/A

Table I.7 RNEE and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the RNEE
Description of Admissions Criteria	N/A
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	<p>The RNEE did differentiate between successful and non-successful student: “The reading comprehension subtest was statistically significant ($R = 0.23, p < 0.05$)...and revealed that a reading comprehension score of 32 was the threshold required for a student to have a 50% probability of success in the nursing program” (p. 133).</p> <p>It was found that a RNEE reading comprehension score of 59 had a 50% likelihood of attaining a B grade or higher in the first nursing course. ($R = 0.36, p < 0.01$). The RNEE test proved to be a better discriminant, but it also revealed that reading comprehension is closely linked with academic success in a nursing program.</p>
Newton et al. (2007)	N/A
Newton et al. (2007)	N/A
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	N/A

Table I.7 TEAS and Key Research Findings

Studies of Measures of Admissions Criteria	Research Findings Regarding the TEAS
Description of Admissions Criteria	<p>“The TEAS is cited as a multiple-choice test that does not permit the use of calculators. Calculators are presumed to be a non-necessity since the test is an assessment of <i>basic academic knowledge</i> [emphasis added] in reading, mathematics, science, and English and language usage. The objectives assessed on the TEAS exam are those which nurse educators deemed most appropriate and relevant to measure entry level skills and abilities of nursing program applicants. Composite scores, as well as several sub-scores, are computed in each of the four content areas to assess specific content comprehension” (I want to know who has the ability to think like a nurse, TEAS, n. d.).</p> <p>Individual’s results are provided so that both the school of nursing as well as the candidate will be aware of which subject areas are in need of “remediation”. It is also noted that the institutions will receive assistance from TEAS’ “psychometricians in developing an admissions formula that best fits your program” (I want to know who has the ability to think like a nurse, TEAS, n. d.), indicating that pre-licensure nursing programs may have differing needs.</p>
Landry et al. (2010)	N/A
Byrd et al. (1999)	N/A
Gallagher et al. (2001)	N/A
Newton et al. (2007)	Found the TEAS test composites score was found to be “most predictive of first semester GPA, explaining 16% of the variance ($F= 11.834, p < 0.001, df = 65$)” (p. 442).
Newton et al. (2007)	Found when TEAS results combined with measures of academic ability (GPA), “nursing aptitude (measured by the TEAS) increases the prediction of early academic achievement” (p. 146).
Robbins et al. (2006)	N/A
Seldomridge and DiBartolo (2004)	N/A
Symes et al. (2005)	N/A

APPENDIX J

SAT COMBINED SCORES AND CORRESPONDING PERCENTILE RANKS

Table K.1 SAT Combined Math and Reading Score with Corresponding Percentile Rank

Score	Percentile Rank
1600	99+
1500	99
1450	98
1400	96
1350	93
1300	90
1250	85
1200	79
1150	73
1100	65
1050	56
1000	47
950	38
900	30
850	22
800	15

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