Doctoral Student Attrition: A Problem for Higher Education

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ABSTRACT: The attrition of doctoral students is a significant problem for higher education. The purpose of this archival quantitative, data mining research study using data from Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics (NCES) was to identify the demographics of doctoral graduates during the 2011-2012, 2012-2013, and 2013-2014 academic years at public, private, and for-profit universities in the United States. This study is significant because universities need to know what the demographics of potential doctoral graduates are before they can begin to work effectively on improving the attrition rates of aspiring doctorates. Findings revealed that here has been an increase in doctoral degrees awarded. While most of the degrees were awarded at public universities, students between the ages of 18-24 tended to earn doctoral degrees at private, nonprofit universities at a higher rate. Also, female doctoral degrees awarded during the 2013-2014 academic years increased to 52% of the total degrees awarded. For-profit universities increased doctoral degrees awarded at a higher percentage than public and private universities (9%-18% at for-profit universities, 3% at public universities, and 0% increase at private universities).

Keywords: Doctoral students, doctoral process, doctoral degree, and doctorate

RESUMÉ: le taux d'abandon des doctorants préoccupe sérieusement l'enseignement supérieur. Le but de cette étude quantitative à archiver (étude d'exploration des données qui utilise des données du Système de données de l'enseignement supérieur intégré (IPEDS) du Centre

américain des données statistiques en éducation (NCES)), devait dégager les données démographiques des titulaires d'un doctorat obtenu dans les années universitaires 2011-2012, 2012-2013 et 2013-2014 d'universités d'Etat, d'universités privées et d'universités à but lucratif aux Etats-Unis. Cette étude représente un intérêt majeur pour les universités car elles ont besoin d'avoir les données démographiques des titulaires de doctorats avant qu'elles ne puissent commencer à travailler efficacement sur l'amélioration des taux d'abandon chez les doctorants. En fait, il y a eu une augmentation de réussite d'obtention de doctorats. Alors qu'en général les diplômes sont décernés par les universités publiques, les étudiants âgés de 18 à 24 ans qui ont eu tendance à décrocher leur doctorat dans les instituts privés et les universités à but non-lucratif, ont représentés un taux plus important. Dans l'année universitaire 2013-2014, la proportion des femmes qui ont obtenu leur doctorat, a augmenté de 52% par rapport à l'ensemble des diplômes décernés. Le nombre de doctorats décernés par les universités à but lucratif représente un taux plus élevé que celui des universités publiques et privées (9% à 18% dans les universités à but lucratif, 3% dans les universités publiques et 0% d'augmentation dans les universités privées).

Mots clefs : doctorants, processus doctoral, diplôme de docteur et doctorat

The academy is facing a crisis. The attrition of doctoral students is becoming a noteworthy challenge for higher education. It is estimated that almost 50% of the students who register in doctoral programs leave the program before earning the degree (Burkard, 2014; Cakmak, Isci, Uslu, Oztekin, Danisman, & Karadag, 2015; King and Williams, 2014). This deficiency of earned doctorates creates damaging consequences for institutions, as well as students. Some of the damaging consequences include student disappointments, concern about the future

of various disciplines, apprehension about the prospect of a range of professions, and financial burdens for institutions of higher learning. The attrition of doctoral students, for example, results in the waste of university human and financial resources due to unrecoverable time invested on students who never matriculate (Kong, Chakraverty, Jeffe, Andriole, & Wathington, 2013; Willis & Carmichael, 2011). Student attrition rates could be the result of unpleasant experiences faced during the doctoral process rather than merely an obstacle at the stage in which the attrition transpires. These unpleasant student experiences could inturn produce unpleasant institutional consequences, as maintained by Willis and Carmichael.

Earning a doctoral degree is how students learn to conduct research, prepare a dissertation, and contribute to the body of knowledge (Callary, Werthner, & Trudel, 2012). Developing the ability to conduct research and establish a record of scholarship that adds to the body of knowledge is vital during the doctoral process (Mello, Fleisher, & Woehr, 2015). There has been a number of research studies conducted on the experiences of aspiring doctorates during this process. While this journey is challenging, there are distinctions between the (a) various academic requirements, (b) encouragement received from classmates, and (c) socialization of the students. Some of the more acknowledged challenges include: loneliness, responsibilities (family and work), limitations (time and financial), self-esteem, and advisor-advisee relationships. These challenges vary from student to student, as claimed by Callary et al.

Kong et al. (2013) posited that socialization might be the reason why doctoral students are not earning their degrees. Socialization is the process by which one learns the social skills and behaviors needed to adjust to a new environment. It includes the learning of new competences,

protocols, convictions, and individual identities required of doctoral students in order to become integrated into the doctoral program. In other words, socialization refers to the myriad of experiences from being accepted into the program to when students finally earn the official designation of doctor. Hence, the level of socialization acquired relates directly to the desire to remain in or depart from the academic program. Kong et al. (2013) found that "family interaction" (p. 82), academic guidance, classmate collaboration, and department and university interactions all influence the decision of whether to continue in the program or to depart.

Registering for doctoral study requires doctoral students to rethink their academic potential, understand faculty assessments of students, identify with their discipline's environment, and manage their own standing as an academic and expert in their chosen field of study. It is essential that doctoral students accept their faculty advisor as a guide who moves them through the doctoral process. This acceptance entails the consideration of faculty and advisors as mentors. Accordingly, any effort on the part of doctoral students to negotiate conflicts between stakeholders (students, faculty, administrators, and peers) regarding the control of their doctorate is one-sided due to the lack of student empowerment. Conflicts between faculty, departmental staff, and advisors have been recognized as principal reasons why students have left doctoral programs and the academic field altogether. Consequently, balancing these relationships has been an ongoing concern. The identification of effective sources of encouragement from all stakeholders is vital for the retention and matriculation of doctoral students, as maintained by Russell (2015).

Hopwood and Paulson (2012) explored doctoral experiences and claimed that doctoral students experience

the doctoral process according to various bodily characteristics. Consequently, each characteristic provides a unique perspective on the experience, which in turn provides opportunities to study the doctoral experiences according to these characteristics. Students think of their gender, for example, as bodily, noticeable, and structured according to ethnic customs, standards, and prejudices. Student characteristics frequently suggest "otherness" (p. 671) based on ethnicity and race.

The purpose of this paper was to identify the demographics of doctoral graduates during the 2011-2012, 2012-2013, and 2013-2014 academic years at public, private, and for-profit universities in the United States. This study is significant because the attrition of doctoral students is becoming an obstacle for higher education. A deficiency of earned doctorates generates damaging consequences for the academy. Identifying who these doctorates are is vital to the future of institutions of higher learning and industry. Universities need to know what the demographics of potential doctoral graduates are before they can begin to work effectively on improving the attrition rates of aspiring doctorates.

A review of the literature presents a compilation of research, peer-reviewed journals, non-peer reviewed journals, books, and online sources on doctoral students. The academic databases used were from the online library of Texas A&M University-Commerce and included, but were not limited to, Academic Search Premier, EBSCO, Education Research Complete, Eric, ProQuest, and Sage Publications. The key descriptive terms used for this research were doctoral students, doctoral process, doctoral degree, and doctorate.

Review of the Literature

For nearly 30 years the socialization practice has been a means for studying doctoral experiences. Many are in agreement that the socialization experience has many sides and is complicated. There have been numerous aspects of socialization and factors that have been shown to impact significantly student socialization and final attainment of the doctorate. Russell (2015) alleged that faculty are thought to be vital to the socialization of doctoral students and are the "primary socialization agents" (p. 148) as they directly influence the learning experiences and training and development opportunities of these students.

Advisor-Advisee Relationships

Research has indicated that a number of doctoral student advisor-advisee relationships were not effective (Barnes, Williams, & Stassen, 2012; Willis & Carmichael, 2011). However Barnes et al. revealed that almost 66% of doctoral students across disciplines were very satisfied with their advisors. This finding was significant given the importance of the relationships in consideration of the influence advisors had over their advisees.

While doctoral students have similar experiences during their academic training, a great number of these experiences are unique to the various academic departments or disciplines. It is plausible, for example, that positive advisor-advisee experiences in one discipline might not be positive in another discipline. Barnes et al. (2012) alleged that advisor-advisee relationships tend to be more successful when students have the opportunity to select their major advisor rather than being assigned an advisor. Nevertheless, doctoral students are generally assigned an advisor after a professor has consented to

undertake the role of guiding the student through the doctoral process (Pauline, Olson, & Gul, 2014).

Progressing through the doctoral process can be taxing for any doctoral student. Koltz, Odegard, Provost, Smith, & Kleist (2010) suggested that assisting doctoral students with the creation of an action plan to complete the comprehensive examination phase effectively might be a valuable activity to facilitate the process. Advisors might also consider designing a "mentoring action plan" (p. 408) as an activity to work together with their doctoral advisees.

Koltz et al. (2010) further suggested that this mentoring action plan should be an activity of collaboration that incorporates comparing experiences of comprehensive examinations, assessing comprehensive examinations, and designing the mentoring action plans jointly. According to Koltz et al., self-doubt tends to recur throughout the comprehensive examination phase. As a result, it is important for advisors to locate a suitable place for doctoral students to be able to communicate uncertainties to their advisors. By collaborating together on these examination experiences advisors are presenting a sense of normality to their advisees which encourages confidence.

Barnes et al. (2012) cautioned that a number of doctoral students eventually become university professors. It is through the doctoral process that doctoral students are trained for the professorate (Barnes et al., 2012; Callary et al., 2012). Consequently, how doctoral students are institutionalized, taught, advised, and managed will impact the future of the academy. It is the academic department that is the principal institutional representative and the advisor is the primary intermediary between the student and the academic department. The advisor, as a result, plays a major role in institutionalizing doctoral students.

Advisors, as "gatekeepers" (Barnes et al., 2012, p. 310) to the professorate, are ultimately the wardens of the academy as they train the future academicians. Advisors train their advisees by performing specific functions such as being (a) a resource for knowledge, (b) an academic department mentor, (c) a sponsor, (d) an exemplar, and (e) a resource to facilitate integration into the institution.

Stubb, Pyhältö, and Lonka, (2014) claimed that doctoral students' perceptions of conducting research operate as a context for choices and behaviors during the doctoral process. Additionally, perceptions of doctoral students on conducting research establish a foundation for achieving academic proficiency. By being aware of doctoral students' perceptions of conducting research, advisors can empathize with students more effectively. However, one student's perception of conducting research does not take precedence over another student's perception. Students are advised to familiarize themselves according to the various types of research, as suggest by Stubb et al. This familiarity with the various types of research available should advance cooperative skills for conducting research in different settings. These skills would ultimately increase the value of these doctoral students in research communities, as well as their ability to add to the body of knowledge.

Supervisory Relationships

The supervision of doctoral students differs between doctoral programs. While the most common relationship is the one supervisor to one student relationship, Pauline et al. (2014) recommended the "co-supervision" (p. 2) relationship. Co-supervision is defined as two members of the faculty mutually consenting to undertake the role of guiding a student through the doctoral process. Initially the doctoral student and the two faculty members are

encouraged to discuss the triad relationship, what each member of the triad brings to the relationship, and how the triad arrangement can complement the doctoral experience for the student.

The most effective co-supervisory relationships occur when the two academicians have collaborated previously by team-teaching, researching, and publishing; agreed on a student-centered emphasis; and regarded learning as the principal objective of the doctoral process. Both members of the faculty should take pleasure in being a member of the team by adapting, cooperating, trying new ideas, and sharing academic endeavors in an attitude of mutuality and reciprocity. According to Pauline et al. (2014), the potential benefits of this type of relationship outweigh any challenges during the doctoral process. Whereas issues during the doctoral process generally include challenges with the single advisor-advisee relationship, a co-supervisory relationship helps to thwart many of these potential issues.

According to Lahenius and Ikävalko (2014), those in supervisory positions for the education of doctoral students are encouraged to rethink the supervision and guidance of doctoral students during the doctoral process. The potential for co-supervision is becoming more and more essential for guaranteeing the excellence of the doctoral education. In addition, the intricacies of supervision make the prospect of co-supervision more crucial for ensuring a quality education. Lahenius and Ikävalko suggested three types of co-supervision: "complementary" (p. 443), "substitutive" (p. 443), and "diversified" (p. 443). These three types of co-supervision vary according to the supervisory support students receive while in their doctoral programs. Complementary and diversified supervision are similar to the committee type

of supervision while substitutive supervision is similar to co-supervision.

Lahenius and Ikävalko (2014) claimed that those who are supervisors in academic departments and members of the faculty should offer supervision arrangements that encourage and endorse co-supervision. The use of co-supervision relationships should also encourage doctoral students to search for supervision assistance from multiple sources. Lahenius and Ikävalko also claimed that lenient doctoral systems require too much responsibility from the doctoral students. More structured and official supervision guidelines for doctoral students are therefore needed from those who are supervisors in academic departments and members of the faculty. Consideration for the use of supervision contracts can help establish the responsibilities of students from the supervisors' responsibilities. Guidelines for handling conflicts would also be beneficial to include in the contracts, as maintained by Lahenius and Ikävalko.

Providing feedback to students is vital for learning. This feedback acknowledges what was done well, points out what was not done as well, and provides constructive comments and advice for future efforts. In doctoral research, constructive comments and advice from supervisors is an important function in helping doctoral students develop the skills necessary for academic research. Doctoral students gain insight from doctoral supervisors during these discussions. It is through the constructive comments and advice provided from supervisors that guide students through the rite of passage of academic research toward the ultimate distinction of researcher and academic scholar (Wang & Li, 2011).

Doctoral students tend to suffer from disturbing reactions to constructive comments and advice regarding research efforts. Doctoral supervisors are therefore

encouraged to be sensitive to these reactions, acknowledge these reactions, and be prepared to respond effectively to these reactions. Responding to and acknowledging these reactions with sensitivity validate the students. Responding to and acknowledging these reactions also facilitate the development of these students into researchers, scholars, and published authors. Transparent and honest communications are fundamental for guiding doctoral students who are aspiring toward research and scholarship distinction. In addition, doctoral supervisors are encouraged to be sensitive to students' perceived lack of power with supervisors and students' impending anxiety relative to potential conflicts. Consequently, these relationships need to include a sense of reciprocity and mutuality between supervisors and doctoral students (Wang & Li, 2011).

Departmental Relationships

Dickens, (2007) reported that doctoral students experience role confusion. For that reason, those in positions of working in academic departments are encouraged to be mindful when introducing new doctoral students into doctoral programs. For example, students reported disharmony between faculty communications and program handbooks concerning roles and relationships throughout the doctoral process. Doctoral students are accordingly, encouraged to recognize and understand that multiple roles and relationships are presented during the doctoral process. These multiple roles and relationships result in countless advantages and disadvantages.

Generally those responsible for doctoral programs have the best intentions but are uncertain about applicants during the admissions process. Even though the literature is replete on the undergraduate college selection process, it is hungry for the doctoral college selection process.

Bersola, Stolzenberg, Fosnacht, and Love (2014) claimed that diversity strengthens the quality of doctoral programs. For that reason academic department heads are encouraged to seek applicants with diverse perspectives. The impact of diverse graduate research strengthens the quality of doctoral programs and benefits academic departments, as maintained by Bersola et al.

Russell (2015) identified transition points in which doctoral students are in need of distinctive styles of mentoring and encouragement. Department heads are also encouraged to study the needs of their doctoral students throughout the doctoral process as needs change. One member of the faculty should not be expected to supply all the mentorship for any doctoral student. Instead, the "academic village" (p. 149) should be expected to provide an assortment of encouragement and support interactions aimed at effective socialization and development of doctoral students. Every effort should be made to provide a supportive and inclusive environment for the benefit of doctoral students transitioning toward their professional roles as stewards of their discipline.

Furthermore, doctoral students are information hungry. They require a thorough understanding of all program requirements and deadlines necessary to earn degrees with minimal roadblocks to degree completion. Student mentors provided to doctoral students from respective departments can result in better understanding of program requirements and deadlines for doctoral students. These student mentors can also guide doctoral students throughout the entire doctoral process. This mentoring and information sharing can be completed either one-on-one or in group settings (Campbell, 2015; Koltz et al., 2010; Onwuegbuzie, Rosli, Ingram, & Frels, 2014).

Willis and Carmichael (2011) suggested that disharmony between doctoral students and departments transpire throughout the entire doctoral process. Disharmony between doctoral students and departments transpire even during the later stages of study, which results in student reevaluation of their individual objectives. Bersola et al. suggested that those responsible for doctoral programs should strive to obtain better understanding of how their respective program impacts student experiences early in the admission process in order to influence appropriately how their programs are perceived by students.

Mello et al. (2015) suggested that, as one example of how doctoral programs impact student experiences, programs should provide doctoral students with opportunities to become thriving researchers and scholars. Mello et al. also suggested that doctoral students should be provided with opportunities to interact with industry. Establishing connections with industry assists students and faculty in attaining grants and creating more practical academic research. This connection with industry should ultimately enhance the potential for harmony between the doctoral student training and the actual job requirements sought by industry employers.

Mello et al. (2015) indicated that in addition to teaching sound theory structures, doctoral programs should encourage doctoral students to link theory to industry issues. Stressing attentiveness to any chasms between education and industry should provide the next generation of researchers with the ability to close these gaps. It is crucial that department heads strive to put into practice programs that lead to prepared and successful doctoral graduates. Instructing students on how to draw connections between research and industry should unite

education to industry more effectively, as suggested by Mello et al.

Demographics

Hopwood and Paulson (2012) maintained that diverse student characteristics evoke perceptions of "otherness" (p. 671) as well as differing perspectives on the doctoral experience itself. In an autoethnographic research study for example, Bates and Goff (2012) discovered nominal information in the literature regarding the experiences of part-time doctoral students. In addition, the definition of a part-time student is not clear. What Bates and Goff uncovered was that these students often have multiple obstacles to overcome throughout the doctoral process resulting in lower matriculation rates. Findings revealed that the greater part of seminars, conventions, appointments, and dissertation defense activities normally take place on the weekday when it is more difficult for part-time students to attend. Bates and Goff suggested that if these activities were scheduled during the first part of the evening or during the weekend then these "invisible" (p.375) students could have opportunities to become involved and feel more like a part of their university community. Also, encouraging the use of technology would provide additional opportunities for student participation.

Research has also suggested that students working full-time while working on a doctorate would create additional challenges for students (Willis & Carmichael, 2011). For example, attending a doctoral program part-time rather than full-time results in delayed student matriculation. Also, there are less female students enrolled in doctoral programs, which indicates that female doctoral students balance family and study times delaying matriculation of future female researchers. In spite of

these findings, doctoral students were generally satisfied with their support during the doctoral process, as maintained by Stackhouse and Harle (2014).

Stackhouse and Harle (2014) revealed that doctoral students are generally older, which is apt to create a shortage of qualified researchers. This shortage produces a diminishing research base. In addition, doctoral students were more likely to have family and work responsibilities to handle while in school. Having these additional responsibilities also postpones matriculation.

Mukminin and McMahon (2013) found that foreign students studying in American universities experienced language problems such as "listening, speaking, reading, and writing during their first semester" (p.14). Nevertheless, these students experienced fewer language obstacles over time and were able to engage confidently in class discussions and collaborate with classmates. Mukminin and McMahon also alleged that in spite of language barriers, these students focused on learning during their first semester. This intense focus on learning positively impacted learning by their second semester which ultimately facilitated the attainment of their goals at their respective institutions.

Research suggested that those who are charged with the responsibility for the learning of doctoral students are to be mindful of the dual or even triple roles in which female and international students must manage. Administrators and professors are also encouraged to validate these students by demonstrating as much compassion as necessary to help reduce negative feelings and experiences. Demonstrating compassion could begin with assigning papers and projects with sensitivity to time commitments of these students with multiple roles (Campbell, 2015; Onwuegbuzie et al., 2014).

Providing support to female and international students in doctoral programs, such as compassion, encouragement, friendship, and collaboration, would in turn result in energizing these students. Providing support also tends to defuse enmity between classmates, produce helpful and constructive criticism for one another, and create unity between students (Campbell, 2015; Onwuegbuzie et al., 2014). Ghosh and Githens (2009) alleged that doctoral students, however, are ultimately responsible for developing their own relationships with classmates, faculty, staff, and administrators in their respective departments.

During the 2011-2012 academic year there were approximately 4 million graduate students enrolled in public, private, and for-profit universities in the United States as maintained by Integrated Postsecondary Education Data System (IPEDS) of the National Center for Education Statistics (National Center for Education Statistics, 2014). IPEDS is a system of interrelated surveys compiled each year by the National Center for Education Statistics. IPEDS gathers information from colleges, universities, and technical and vocational institutions that are involved in federal student financial aid programs. The Higher Education Act of 1965, as amended, requires institutions that are involved in federal student aid programs to submit data on enrollment, program completion, graduation rates, faculty and staff, finances, institutional prices, and student financial aid (The Higher Education Act of 1965). These data are made available to the public through the IPEDS Data Center. The IPEDS reported the demographic information shown in Table1.

Table 1
Among graduate degree programs, percentage distribution of graduate students, by selected program, institutional, and student characteristics: 2011–12

Program, institutional, and student characteristics	**Doctor's degree – research/ scholarship**	**Doctor's degree – professional practice**
Total	**100.0**	**100.0**
Field of study		
Business administration1	4.9	0.1
Education	17.1	
Law	0.4	34.0
Medicine & other health science	6.6	59.6
STEM fields	42.4	1.9
Other	28.7	3.7
Type of institution		
Public	61.7	39.1
Private nonprofit	29.8	59.4
For-profit	8.5	1.5
Attendance status		
Full-time, full-year	54.2	82.5
Part-time or part-year	45.8	17.5
Sex		
Male	50.0	45.8
Female	50.0	54.2
Race/ethnicity		
White	55.3	68.3
Black	11.1	6.6
Hispanic	7.2	5.9
Asian	23.6	15.2
Other or Two or more races	2.9	4.0
Citizenship		
U.S. citizen	71.3	94.7
Resident alien	4.4	2.5
Foreign or international student	24.2	2.7

Source: National Center for Education Statistics, U.S. Department of Education (2014)

In summary, a review of the literature indicated that the estimated nearly 50% attrition rate of doctoral students is regarded as a major problem in higher education. This deficiency of earned doctorates creates damaging consequences for institutions, as well as doctoral students who leave the academy prior to graduation. Additionally, it is through the doctoral process that doctoral students are trained for the professorate. Consequently, how doctoral students are socialized, advised, supervised, mentored, and handled by their respective departments, supervisors, and advisors responsible for their progression through the doctoral process will ultimately impact the future of the academy. Identifying the demographics of doctoral student in higher education is the first step in determining effective socialization processes to meet the individual needs of these students for degree completion.

Table 1 indicated that the demographics of doctoral students enrolled in universities in the United States are United States citizens (71.3 %-94.7%), full-time (54.2%-82.5%), white (55.3%-68.3%), and female (50%-54.2%). In addition, doctoral students studying in research/scholarship programs (STEM, education, and other fields) are attending public universities (61.7%) while those in professional practice programs (medicine and other health science fields) are attending private, nonprofit universities (59.4%).

Consequently for-profit universities (1.5%-8.5%) are not enrolling doctoral students at the same degree that public (39.1%-61.7%) and private, non-profit (29.8%-59.4%) universities are. Also, just under half of the doctoral students are enrolling on a part-time basis (45.8%) in research/scholarship programs (STEM, education, and other fields) but under one-fifth of the students are enrolled on a part-time basis (17.5%) in

professional practice programs (medicine and other health science fields).

Method of Procedure

This research study was an archival quantitative, data mining study using data from IPEDS. This study identified the number of doctoral degrees awarded during the 2011-2012, 2012-2013, and 2013-2014 academic years according to available demographic data from public 4-year or above universities, private 4-year or above universities, and for-profit 4-year or above universities in the United States.

Data were extracted according to institution type in 4-year or above universities in the United States. The data were downloaded from IPEDS and converted into an Excel document. The Excel document was formatted and cleaned up.

Findings

The findings revealed the following information shown in Table2 about doctoral degrees awarded from public, private, and for-profit 4-year or above universities in the United States during the 2011-2012, 2012-2013, and 2013-2014 academic years.

Table 2
2011-2012, 2012-2013, and 2013-2014 Doctoral Degrees Awarded According to Institutional Type and student Demographics

Doctoral Degrees Awarded	2011-2012			2012-2013			2013-2014		
	Public (314)	Private Non-Profit (529)	Private For-profit (51)	Public (324)	Private Non-Profit (547)	Private For-profit (57)	Public (328)	Private Non-Profit (570)	Private For-profit (58)
Total	83327	79548	6033	86053	81431	7111	88753	81120	7781
Sex									
Male	40969	38814	2320	42403	39697	2832	43675	39126	2922
Female	42358	40734	3713	43650	41734	4279	45078	41994	4859
Race/ethnicity									
White	49199	47552	3345	50394	47991	3854	51166	46998	3966
Black	4616	4981	1144	4756	5047	1343	4929	5077	1675
Hispanic	3775	4394	253	4265	4636	377	4565	4884	446
Asian	6960	8638	292	7189	9016	404	7787	9273	400
Other	5932	7533	915	6104	7914	1029	6356	7717	1209
Nonresident alien	12845	6450	84	13345	6827	104	13950	7171	85
Age									
Under 18		1		2				10	
18-24	3954	5969	100	4604	6063	137	5152	5823	99
25-39	68979	64211	3022	71389	65482	3811	72314	65259	3831
40 plus	9797	8576	2860	9888	8950	3141	9993	9280	3821
Unknown	597	791	51	170	936	22	1294	748	30

Discussion and Conclusion

Findings revealed an overall increase of almost 2% to over 3% increase of doctoral degrees awarded during the 2011-2012, 2012-2013, and 2013-2014 academic years. According to the available IPEDS demographic data on public 4-year or above universities, private 4-year or above universities, and for-profit 4-year or above universities in the United States, the majority of doctoral degrees awarded during the 2011-2012, 2012-2013, and 2013-2014 academic years were to females (females made

up approximately 51%-52% while males earned about 49% to 48%), whites (earned 57%-59% of the degrees awarded), and students ages 25-39 (earned 80%-81% of the degrees awarded). Public universities awarded the majority of doctoral degrees (49%-50% at 314-328 public universities, 46%-47% at 529-570 private universities, and 4% at 51-58 for-profit universities) during the 2011-2012, 2012-2013, and 2013-2014 academic years.

In conclusion, there has been an increase in doctoral degrees awarded during the 2011-2012, 2012-2013, and 2013-2014 academic years at public 4-year or above universities, private 4-year or above universities, and for-profit 4-year or above universities in the United States. While most of the degrees were awarded at public universities, students between the ages of 18-24 tended to earn doctoral degrees at private, nonprofit universities at a higher rate. Also, female doctoral degrees awarded during the 2013-2014 academic years increased to 52% of the total degrees awarded. Additionally, for-profit universities increased doctoral degrees awarded at a higher percentage than either public or private universities (9%-18% at for-profit universities, 3% at public universities, and 0% increase at private universities).

Implications

The implications from this research are numerous. To begin with, there are a number of doctoral students who do not matriculate. Higher education must examine the demographics of its respective doctoral students during the socialization process in its doctoral programs to avoid continued loss of valuable student resources. Another implication, there are a number of doctoral candidates who are never awarded their doctoral degrees. Institutions must follow these students to determine what happens to these

lost scholars. Consequently, institutions must also communicate with these students to determine if they provided sufficient advisory, supervisory, and departmental socialization needed during the doctoral process.

Limitations and Delimitations

At the onset of this study, specific limitations and delimitations were recognized. In view of the completed study, discussion of these limitations is necessary. The quantitative data for this study were obtained from the 2011-2012, 2012-2013, and 2013-2014 academic years of institutions that reported to IPEDS. An examination of previous or subsequent years may have yielded different results. Additionally, data were only gathered from institutions that report to IPEDS. Although the IPEDS Data Center provided large sample sizes in all sectors of institutions, the inclusion of institutions that do not report to IPEDS may have altered the results of this study. In addition, as with all self-reported data, it is possible that data were reported to IPEDS incorrectly. If this were the case, the information would yield inaccurate results.

Recommendations

It is recommended that this study be replicated to validate these findings. Further research could be conducted examining why these demographics exist in the first place. Moreover, why are there more women then men in doctoral studies? Why are minority groups underrepresented in doctoral studies? Why does the age of enrollment leave out mature students above the age of 39? It is also recommended that studies be conducted to determine if the role of socialization is impacted by other

factors than student demographics. In addition, studies could be conducted to ascertain if similar problems exist in other countries regarding the attrition rates of doctoral students. It is further recommended that ongoing studies be conducted to monitor the attrition rates of doctoral degrees in the United States.

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