7-1-2009

The Federal Presence in Education: An Analysis of One GEAR UP Grant Program's Impact

Jennifer Knowles

The Federal Presence in Education*:*
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A Practicum Paper
Submitted in Partial Fulfillment of the Requirements for the

Master of Public Administration

Kennesaw State University

July 2009

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Executive Summary

This research project investigated the federal GEAR UP grant program, designed to improve the college preparedness and college success rate of low-income/minority students, as implemented in the Marietta City School District. The demographics of the district are 65 percent economically disadvantaged and 80 percent racial minority. The grant, which provides funding for a six-year period, was awarded in 2005 to serve a specific cohort of students—the Marietta High School (MHS) graduating class of 2011—beginning when they were in 7th grade at Marietta Middle School. The students in the cohort are currently transitioning into 11th grade at MHS. Following is an overview of the major challenges, main hypothesis, key outcomes, and recommendations.

Opportunities for serving all of the students in the GEAR UP cohort have been restricted because chief school personnel have not permitted GEAR UP-sponsored activities to be conducted during class time, as they are in most other such programs. This has largely prevented the grant's scope and capacity from maximizing both outreach and impact. As a result, only 10 percent of students in the cohort actually participate in GEAR UP-sponsored activities, which occur in a weekly after-school program.

The purpose of this research was to examine if GEAR UP participation had a significant effect on whether students in the cohort plan to pursue post-secondary education. It was my hypothesis that students in the cohort who participate are significantly more likely to report that they plan to pursue post-secondary education than students who do not participate. The findings (generated using ANOVA) suggest that this is the case. The mean response of 4.72 (an interval, 5-point Likert scale measurement) for participating students' plans to pursue post-secondary education was significantly higher than the mean response of 4.42 for non-participating students' plans,

as p = 0.032 < alpha = 0.05. However, a staggeringly high 93.4 percent of the entire cohort, whether participating students or not, reported plans for higher education after high school. This raised the question: If the grant is not having a significant impact in terms of the number of students it is influencing, what other forces are operating to produce this staggeringly high result across the whole cohort? Moreover, why are the results not reflecting the likely reality that a mere 40 percent will pursue education beyond high school?

Despite more than half a century of federal attempts to assist the economically disadvantaged, the United States appears insufficiently better off regarding low-income/minority education. This study's measured differences in cumulative GPA by ethnicity (determined using Tukey's test) provide evidence of this: Caucasian students' average cumulative GPA of 3.104 is statistically significantly higher than African-American students' average cumulative GPA of 2.389. The United States is far from where it should be had it pursued the implementation of federal efforts as seriously and intensely as they require.

Increasing the effectiveness of educational opportunity grants for low-income /minority students requires a serious commitment from the schools in which these grants operate (as evidenced by St. Olaf GEAR UP successes). It may also require more drastic efforts that include a focus on cultural transformation. If it is true that, using a common phrase with a twist, "one can take the student out of the 'ghetto,' but cannot take the 'ghetto' out of the student," then perhaps the focus needs to be shifted to changing the "ghetto" culture. Federal programs like GEAR UP might consider redirecting their efforts as results from this study suggest that the factors putting so many at risk for academic failure may actually be beyond the school system and embedded in the culture.

Introduction

GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) is a federal grant program funded through the United States Department of Education with the goal of "significantly increasing the percentage of low-income students who are prepared to enter and succeed in post-secondary education" (U.S. Department of Education, 2009). The grant provides funding to a cohort of students, in which two-thirds must be low-income, for a six-year period beginning when the cohort enters 7th grade and culminating when the same cohort finishes 12th grade. As an early intervention grant program, GEAR UP is designed to improve the college preparation and college success rate of low-income students by targeting students as early as middle school and providing them with information about college options. More than 1 million students in nearly every state are served by a GEAR UP grant program.

There are two types of GEAR UP grant programs: those awarded to states and those awarded to partnerships. Both types of grant programs are composed of a team of at least one local institution of post-secondary education, one school district, and two community-based organizations that partner to provide a broad range of support services needed to increase college awareness and prepare students to be eligible and competitive for college admittance and success. State grants are required to have a scholarship component whereas partnership grants are not. For the purpose of this particular research, the existing GEAR UP partnership grant between Kennesaw State University (KSU) in Kennesaw, Georgia and the Marietta City School District in Marietta, Georgia will be examined. The cohort served by the grant consists of all of the students in the Marietta High School (MHS) graduating class of 2011. The grant was awarded in 2005 when the students in the cohort were in 7th grade at Marietta Middle School. They are

currently transitioning into 11th grade at MHS. The cohort, as it will be in 12th grade, is not the exact same population as it was in 7th grade for various reasons (i.e., students in the original cohort fell behind academically, dropped out, or transferred from the district).

The demographics of the Marietta City School District are not aligned with high student academic attainment and educational success. The district has one of the highest minority populations in all of Cobb County—nearly 80 percent (Governor's Office of Student Achievement [GOSA], 2008). Recent state assessments revealed that 65 percent of the students in the district are economically disadvantaged and allocated free or reduced school meals as a result, compared with 51 percent for the State of Georgia (GOSA, 2008). Furthermore, the 9th grade on-track rate for the Marietta City School District is merely 55 percent compared with 68 percent for the State of Georgia (GOSA, 2007). Getting off-track means that a student's graduation date has been deferred because he/she has failed one or more core courses and thus lacks the necessary credits to advance to the next grade on time. Additional assessments revealed that just over one-third (35.5 percent) of the MHS 2005 graduates reported they would enter Georgia public colleges within that year and 6.8 percent reported they would enter Georgia public technical colleges; of the MHS Class of 2006, 34.6 percent reported they would enter Georgia public colleges within that year and 8.8 percent reported they would enter Georgia public technical colleges (State of Georgia, 2006). It was difficult to obtain accurate information regarding drop-out rates and graduation rates due to the inconsistencies reported across the district and the state.

The KSU/MHS GEAR UP grant program operates in a fashion different from most GEAR UP grants because of its structure. This has largely limited its scope and capacity to maximize outreach. In the conventional approach, all students in a cohort

served by a GEAR UP grant program participate in GEAR UP-sponsored activities. Such activities are typically conducted on a weekly basis by GEAR UP staff during periods of class time designated by school faculty. In this fashion, GEAR UP is able to target and thus work with all students in its cohort by providing them with opportunities to participate in GEAR UP-sponsored activities while in class. However, opportunities for serving all students in the KSU/MHS GEAR UP cohort have been restricted as a result of decisions made by chief school personnel who prefer class time not be used on activities outside the scope of traditional subject matter. This has negatively affected the KSU/MHS GEAR UP grant program's ability to work with all of the students in its cohort. Because of this, only a small proportion of students actually participate in GEAR UP-sponsored activities which, aside from two annual college visits and an annual week-long summer camp, occur in a weekly after-school program, a program that competes with after-school tutoring and other school clubs and athletics for participants. The remaining members of the cohort are simply members of the cohort, meaning that they comprise individuals in the group served by the GEAR UP grant program, yet they do not participate in its activities. In this study, for both clarification and data-coding purposes, those students who participate in GEAR UP-sponsored activities will be termed "active" and referenced as such and those students who are members of the cohort but do not participate in GEAR UP-sponsored activities will be termed "passive" and referenced as such.

GEAR UP-sponsored activities, which are services mandated by the United States Department of Education, that take place in the after-school program appropriately named "College Club," include academic advising, college and career pathway exploration, tutoring, and mentoring (a complete list of services is outlined in the

variables section below). Students who attend also have the opportunity to learn from and interact with regular guest speakers who have a wealth of personal knowledge and experience regarding specific colleges and/or careers. Students attending "College Club" also receive monthly instruction from Junior Achievement—one of the grant's local community partners. Junior Achievement curriculum includes programs entitled Success Skills, Financial Literacy and Planning, Careers with a Purpose, and Job Shadow. Junior Achievement collaborates with GEAR UP to provide the students with curriculum that advances the GEAR UP grant program's target goal. Active GEAR UP members also participate in college tours, job site visits, and week-long summer camps (in which students are exposed to a multitude of colleges and job sites within the week). Currently grant resources of both time and money are dedicated largely to the field trips and camps.

All students in the cohort, whether active or passive, do receive educational handouts in their advisement period on a weekly basis from the GEAR UP grant program. Information in the handouts includes sample/practice PSAT (Preliminary Scholastic Aptitude Test) problems, recommendations for improving grades, reasons for limiting absences, U.S. Census data on expectations of future salaries based on educational attainment, and the like. Passive members of the cohort do not, however, interface with GEAR UP staff or participate in hands-on GEAR UP-sponsored activities.

Purpose

The purpose of this research is to examine if GEAR UP participation has a significant effect on whether current GEAR UP students plan to pursue post-secondary education. By distinguishing if participation significantly improves a student's plan to attend post-secondary education, funds provided by the GEAR UP grant program can be

used more effectively—as resources will be directed appropriately—in continuing to serve the current GEAR UP cohort and in serving future GEAR UP cohorts.

Statement of the Research Question/Hypothesis

The objective of this research is to determine whether participation in GEAR UP-sponsored activities has a statistically significant effect on whether or not current GEAR UP students plan to pursue post-secondary education. It is my hypothesis that active members of the GEAR UP cohort are significantly more likely to report that they plan to pursue post-secondary education than students who are passive members of the cohort. This will be assessed by an analysis of variance (ANOVA). In addition, ANOVA may reveal whether absences, cumulative GPA, and core GPA—all predictors of academic attainment—are influenced by active versus passive membership. Furthermore, linear correlations may exist between core GPA and cumulative GPA, PSAT composite score and cumulative GPA, and absences and cumulative GPA. Current responses of students regarding plans to pursue post-secondary education will be compared with the actual results (when the students graduate from high school in June of 2011).

Need/Relevancy of Research

The GEAR UP grant program, originally a President Bill Clinton initiative, was instituted in 1998 as a college access program aimed at disadvantaged youth. Though the program has proved successful, generally, its "best practices" have not yet been established. This study will serve to generate an examination of GEAR UP's "best practice" services to lead to improved program implementation for future GEAR UP cohorts. In doing so, this study will directly benefit the students served by the GEAR UP grant program. Furthermore, by addressing measures to maximize program effectiveness, GEAR UP grant funds will be utilized more efficiently.

The Growth of the Federal Presence in Education

Prior to exploring GEAR UP, it is important to understand how the intergovernmental structure of the public education system in the United States evolved to allow GEAR UP to come to fruition—as it is a federally funded, U.S. Department of Education program, operating in a public education system that has primarily been a state and local responsibility. State governments have historically issued regulations and laws governing schools and delegated responsibility for school operation to local governments (Organization for Economic Co-operation and Development [OECD], 2005). As such, individual states, rather than the federal government, have primary authority over public education. All state constitutions identify the role of the state government in establishing and operating a public school system free to all students (OECD, 2005). In many respects, public education is viewed as a states' rights issue, and thus a states' responsibility. Until recently, the federal government's role in public education has been relatively small.

Prior to the 1950s, federal financial support for elementary and secondary education was minimal, and the federal role in state and local decision making was modest (Kantor, 1996). Yet, beginning in the late 1950s, state and local control of public education became subject to federal influence, and thus to increased federal intervention, monitoring, and oversight. This resulted in the federal government giving states control over policy only in areas that were not of national concern; the federal government retains control over any policy that it regards as truly important (Rubin, 2001). Public education is one. As such, federalism evolved, particularly in recent history, to give the federal government a larger role in the public education system. GEAR UP was not the

first instance of federal involvement in public education. Rather, it is one of the more recent in a continuation of a sixty-year trend of federal expansion.

Congress passed the first comprehensive federal education support legislation—the National Defense Education Act (NDEA)—in 1958. It was intended to ensure the security of the United States (in response to the Soviet launch of Sputnik) by providing federal aid to advance science, mathematics, and foreign languages in elementary and secondary education. NDEA was one of the first direct communications between the federal government and local governments by an act of Congress. It began during the period of cooperative federalism (1930s-1960s). Under cooperative federalism, the federal government and states had begun working together; policy overlap started to occur because they were getting involved in the same areas. As a result, the roles of the federal government and state governments often blurred. The growing power of the federal government gave way to coercive federalism.

Coercive federalism (also known as Centralized or Regulatory federalism) began in the 1960s. This phase saw more conflict between the federal government and the states. It began with the Civil Rights Act of 1964, which banned private entities and states from discriminating based on race. In *Brown v. Board of Education* (1954), the U.S. Supreme Court had already held that separate but equal was no longer a valid interpretation of the Fourteenth Amendment. This resulted in a high tension period. Resistance from Southern states tipped off conflict between the federal government and the states, and as a result the federal government had to send troops into Arkansas, for example, to enforce desegregation. The Civil Rights Act of 1964 reflected a change in federal-state relations and, as such, it was one of the most important acts passed by Congress. The passage of the Act necessitated the federal government to employ

coercive means to get states to follow its laws. In this new phase of centralized federalism, power started to flow toward the federal government in a way that states did not like or readily accept.

In the mid-1960s, through President Johnson's "Great Society" era, the federal government began giving money to local governments in a significant way. One aspect of this particular phase was called fiscal federalism because tensions were relieved by financial aid. It was at this time that the federal government began using categorical grants to entice state and local education agencies to focus on such target groups as the disadvantaged (Posner, 1998).

A number of federal anti-poverty laws pertaining to public education were passed in the 1960s and 1970s, including the Elementary and Secondary Education Act (ESEA) of 1965. ESEA, which provided federal aid to education, was launched as a comprehensive set of programs to address the problems of poor urban and rural areas. ESEA was a landmark in terms of increasing the federal role in education (Fuhrman, Cohen, and Mosher, 2007). Equal opportunity provided the rationale for other federal education initiatives as well. Head Start was also launched in 1965 as an integral part of Lyndon Johnson's War on Poverty. The federal preschool program was designed to assist economically disadvantaged children.

In the 1980s, the federal government started to exert its power on the states by putting strings on certain grants (hence the term regulatory federalism). It acquired much of its current leverage and power in this manner. Thus when states accepted federal money, they had to abide by certain stipulations. The structure of education grants and the control mechanisms (strings) attached to them were no different. In fact, between

1965 and 1980, federal grants-in-aid for elementary and secondary education increased from approximately $2.1 billion to $8.7 billion (Kutner and Sherman, 1982).

GEAR UP was also designed as a federal grant-in-aid program for education, specifically secondary education. It is a type of categorical grant called a project grant, meaning that it has to be applied for and is thus competitive. Like many grants, GEAR UP has a matching component.

Following a major trend in the evolution of federal education policy, GEAR UP also targets the disadvantaged subset of the population. It was introduced as part of the 1998 Reauthorization of the Higher Education Act (Public Law 105-244) for the purpose of "enlisting colleges and universities to reach out to disadvantaged children, starting in the 7th grade, so that they can get the guidance and hope they need to know that they, too, will be able to go on to college" (Clinton, State of the Union Address, 1998).   Since its inception, federal funding for the program has nearly tripled from $120,000,000.00 to $313,212,000.00 (U.S. Department of Education, 2009).

GEAR UP is a relatively new federal education initiative. Yet, as a result of heightened federal involvement and federal intervention in educational policymaking, a large number of challenges have occurred in recent years (notably in regard to No Child Left Behind), leading many to question the success of federal education programs. Since current trends show that education will continue to remain on the national agenda, it is imperative that this research is conducted to evaluate the impact of one federal education project—the KSU/MHS GEAR UP grant program—so that emendations can be made where necessary to generate practical and effective solutions that lead to successful results.

Theoretical Framework/Review of Pertinent Literature

GEAR UP has become a major player in closing the gap between the haves and have-nots in education (Fields, 2001). Education attainment disparities across demographic profiles (particularly socioeconomic and ethnic/racial classes) were the prime reason for the GEAR UP program's founding. As such, GEAR UP established a target population for its cohorts, mandating that at least two-thirds of the students served by the grant be from low-income households. Students served by the grant are typically of ethnic/racial minority backgrounds as well. One particular study confirming this statistic concluded that African-American and Hispanic youth are three times as likely to come from families with incomes of less than $20,000.00 than non-Hispanic white or Asian-American youth (Kane, 2003).

Low socioeconomic status is strongly associated with school absenteeism (Zhang, 2003). High levels of absenteeism have, not surprisingly, been found to have a negative effect on academic achievement. Evidence of a direct correlation between school attendance and academic achievement is strong. A Chicago school district study, conducted by the Consortium on Chicago School Research, indicates that ninth-grade grades and attendance are the two most important indicators of high school success and predictors of on-time high school graduation (Gewertz, 2007). According to the study, high school freshmen with a D average have approximately a 25 percent chance of graduating in four years, and freshmen who miss over ten days of school per semester cut their chances of graduating in four years to 40 percent. Similar research conducted by the National High School Center found that students at risk for dropping out of high school can be identified as early as sixth grade by key warning signs—poor grades and low attendance (Breaden, 2007).

Evidence of a correlation between educational attainment and ethnic/racial status is also strong. A 2006 study published by *The New York Times* indicated that finishing high school has become the exception in educational attainment for minorities, particularly those of an African-American or Hispanic background (Boyd, 2007). According to the study, five times as many African-American men are currently in prison as in four-year colleges and universities. Additional findings report that African Americans and Hispanics trail behind both non-Hispanic whites and Asian Americans in high school graduation rates (namely 80 percent of African Americans and 57 percent of Hispanics graduate from high school compared with 90 percent of non-Hispanic whites and 88 percent of Asian Americans); furthermore, only 17 percent of African Americans and 11 percent of Hispanics attain a four year college degree, whereas 30 percent of non-Hispanic Whites and 50 percent of Asian Americans do (U.S. Census Bureau, 2000). A more recent source indicates the high school drop out rate for minorities is, in fact, half (U.S Department of Education, 2009).

Because of these statistics, additional studies have been conducted to examine the average earning levels of those who only finish high school compared with those who continue their studies by pursuing post-secondary education. Results published in the 2000 U.S. Census Bureau report conclude that those who pursue post-secondary education earn significantly more on average than those who do not. An individual who completes no more than a high school diploma will earn on average $27,351.00 per year, whereas an individual who completes a bachelor's degree will earn on average $42,877.00 per year (U.S. Census Bureau, 2000).

Earning levels vary significantly with ethnic/racial characteristics as well. There is a significant discrepancy between the median income of non-Hispanic whites and

Asian Americans and that of African Americans and Hispanics. Non-Hispanic whites earn roughly 22 percent more than African Americans and 29 percent more than Hispanics with the same credentials (U.S. Census Bureau, 2000). The GEAR UP grant program operates under the conviction that increased awareness is the key to helping more low-income minorities go to college and, in turn, access their greater earning power.

Often low-income students are negatively labeled as low-achieving, disadvantaged, and struggling. A three-year case study report illustrates how the structure and culture of schools shape educational reform. It highlights the importance of "high-stakes" information as a critical strategy in developing students' college-going identities (Cooper and Liou, 2007). Programs (like GEAR UP) that aim to educate low-income students about the processes of post-secondary education have are based on the notion of a "culture of power" (Delpit, 1995). For those who are unfamiliar with how a particular culture operates (i.e., college), the "rules" for attaining a position in that culture are invisible and difficult to ascertain. When those unfamiliar with the culture are taught the rules, they can more easily attain a place in that culture. The GEAR UP grant focuses on making the invisible pathway to college visible, thus making post-secondary education attainable to members of this population.

Studies on specific GEAR UP grants have validated the program's overall success in increasing the percentage of low-income students who pursue post-secondary education. One particular study conducted on GEAR UP 10th grade students in two high schools in the Rio Grande Valley of Texas examined differences in student educational aspirations, expectations and anticipations, knowledge of college entrance requirements, and knowledge of financial aid. Adelman's (1999) anticipations scale was used to

measure the college plans of the two GEAR UP cohorts of students, and the main findings included higher aspirations and college knowledge for GEAR UP students as well as significantly higher academic preparation for those students (Watt, Huerta, and Lozano, 2008).

A similar study reported the results of an evaluation from another Texas GEAR UP program implemented in six different school districts across the state from 1998 to 2005. In this particular case, the central dependent variable was reports by parents of graduating seniors about whether their children would be attending college. A multivariate analysis, controlling for household socioeconomic status, student grades and attendance, household composition, and language spoken in the home, indicated that increased student exposure to the GEAR UP program markedly increased the probability that parents reported their children would be attending college (Weiher, Hughes, Kaplan, and Howard, 2006).

Outcome data from a study assessing the St. Olaf College GEAR UP grant program (one of the original 1999 GEAR UP grant awards) also reported positive results. The program served 300 students in St. Paul, Minnesota's Humboldt Senior High School Class of 2005. A follow-up report indicated that 96 percent of the 2005 GEAR UP cohort graduates applied and were accepted to at least one college, an increase of 38 percent compared with the preceding 2004 class; furthermore, the four-year high school graduation rate of the 2005 GEAR UP cohort was 84 percent, an increase of 52 percent compared with the preceding 2004 class (St. Olaf College GEAR UP, 2006). The report also found that students who began with the GEAR UP program in 7th grade had a four-year high school graduation rate of 88 percent.

Despite the positive results of the program generally, individual GEAR UP grant programs do encounter obstacles owing to forces operating outside the grant (i.e., school restrictions, etc.) that hinder maximizing outreach to their target cohorts. If, as in this particular case, participation in the GEAR UP grant program does influence student indications to pursue post-secondary education, then not only can the grant administrators direct their focus on working to increase participation in its activities, but they can possibly utilize the results to initiate larger changes in the school that counteract those forces hindering their ability to have an impact. As such, the results of this research may be of interest to other programs in schools with similar agendas and similar roadblocks.

Variables/Operational Definitions

For the purpose of this research, it is important to note that the following will be used as measures of assessment:

- The sample population being analyzed is the complete KSU/MHS GEAR UP student cohort class of 2011.

- The unit of analysis is each individual student in the cohort.

- The response variables are categorical (see student survey).

- The explanatory variables listed below are the GEAR UP services mandated by the United States Department of Education and provided to the cohort:

$X1$ = Total number of minutes a student receives: tutoring/homework assistance/academic enrichment; computer assisted labs; mentoring; counseling/advising/academic planning/career counseling; college visits/college student shadowing; job site visit/job shadowing; summer programs; educational field trip; workshops with other KSU/MHS GEAR UP cohort students; family events; cultural events; program newsletters; phone contacts

X2 = How many times a student attended GEAR UP "College Club"

Note—all services listed as explanatory variables above are provided and sponsored by the KSU/MHS GEAR UP program administrators and thus can be controlled by the program administrators for assessment purposes.

Furthermore, all services listed as explanatory variables above will be documented as quantitative and continuous.

Additional explanatory variables not yet specifically monitored by the United States Department of Education may be of interest for the purpose of this study and may be assessed accordingly are as follows:

X3 = Gender (nominal: 0=M, 1=F)

X4 = Age (quantitative: between 15 and 19 years old)

X5 = Ethnicity (categorical: African American/African/Black, Asian American, Caucasian/White, Hawaiian/Pacific Islander, Hispanic/Latino, Native American/American Indian, Multicultural, and Other)

X6 = School Absence(s) (quantitative: between 0 and 93)

Note: School Absences represent the number of full day absences recorded during the 2008-2009 academic school year)

X7 = Cumulative GPA (quantitative; between 0 and 4.368)

X8 = Core GPA (quantitative: between 0 and 4.523)

X9 = PSAT Composite Score (quantitative: between 0 and 203 out of a possible 240)

Type of Research Design

A type of non-experimental design, particularly a single group posttest, was used for the purpose of this study and will continue to be used for future, related follow-up

studies. A nominal ("yes"/"no") and an interval, 5-point Likert scale ("definitely," "probably," "not sure," "probably not," and "definitely not") measurement of the response (whether or not a student plans to pursue post-secondary education) was documented and will continue to be documented during each of the remaining two consecutive years of the grant and at the end of the grant cycle following the implementation of the GEAR UP services to students in the KSU/MHS GEAR UP cohort. Data were also collected on gender, age, ethnicity, school absences, cumulative GPA, core GPA, and PSAT composite scores. Specific efforts to control for internal and external validity as well as measurement reliability are discussed below.

Unit of Analysis/Ethical Consideration

The unit of analysis for this particular study is the individual student in the KSU/MHS GEAR UP cohort. Since minors are the subject of this research, parental/guardian consent was sought and documented through the use of a consent form distributed to the authorized representative of each student enrolled in the cohort served by the grant. All students in the GEAR UP cohort are required to have parental/guardian consent, so the sample population was not reduced on this account.

All data gathered through student participation in GEAR UP services will remain strictly confidential and will not be released in any individually identifiable form without the prior consent of the participant unless required by law. Only I (the researcher) have direct access to project information. This report does not, nor will future reports, include any information which identifies the authorized representative or the student as a participant in this study. Only aggregate information will be released. Furthermore, an alpha-numeric code has been assigned to each record to separate all identifying information from each individual's data. The list of names and matching codes are kept

separately. Moreover, all hard documents (including parent/guardian consent forms, student service participation logs, list of names and matching alpha-numeric codes, and any additional data assessment documents) are stored in a locked filing cabinet. All data collected and analyzed by computer are kept under strict password protection. Data will be destroyed one year after the results have been compiled and the report has been completed.

Selection of Population and Sampling Procedure

For the purpose of this study, I will examine the existing 498 KSU/MHS GEAR UP grant cohort students currently transitioning into the 11th grade at Marietta High School in Marietta, Georgia. The students in the cohort will continue to be served by the GEAR UP grant and monitored for the purpose of this study as long as they remain at Marietta High School and in the same cohort. Thus, if they fail a grade, drop out of school, or transfer to another school, their data will no longer be assessed and analyzed in the final tabulation because they will no longer be a part of the Marietta High School graduating class of 2011 served by the KSU/MHS GEAR UP grant program.

Since the KSU/MHS GEAR UP grant cohort was predetermined by the federal government (the sample population was assigned by the U.S. Department of Education), no sampling procedure has been utilized. Each student in the cohort, whether or not he/she is of the mandated two-thirds low-income background, is served by the grant and its services and therefore was and will continue to be observed and analyzed for the purpose of this research.

The proportion of students assessed throughout this study varied owing to the missing data across the range of data (variables) collected. The missing data was excluded for each of the relevant statistics and tests. Of the 498 students who are part of

the KSU/MHS GEAR UP grant cohort, a total of 318 students had complete data (64 percent of the initial eligible population). Of those students with complete data, the racial diversity is as follows: African American/African/Black: 41.2 percent; Asian American: 2.8 percent; Caucasian/White: 23.0 percent; Hispanic/Latino: 21.1 percent; Multicultural: 9.4 percent; and Other: 2.5 percent (see Chart 1 below). Females comprised 46.5 percent of the sample, males 53.5 percent.

CHART 1: Ethnicity – All GEAR UP Cohort Members
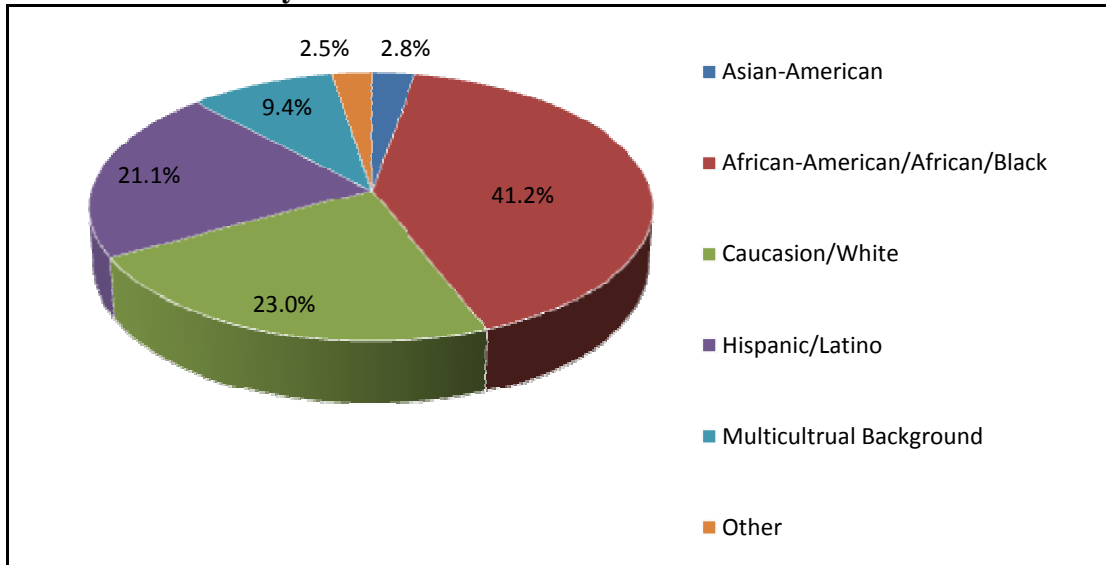
Of those 47 members of the cohort (approximately 10 percent) who participated in GEAR UP-sponsored activities, the racial diversity is as follows: African American/African/Black: 66.0 percent; Caucasian/White: 10.6 percent; Hispanic/Latino: 10.6 percent; Multicultural: 10.6 percent; and Other: 2.1 percent (see Chart 2 below). Females comprised 59.6 percent of the sample, males 40.4 percent.

The gender composition of the active GEAR UP members is rather compelling. It serves to support the "goody two shoes" phenomenon that high school females have a higher diligence and dedication to academic achievement. One particular article in *Youth Outlook* addressing the gender gap in education supports this by explaining that "males
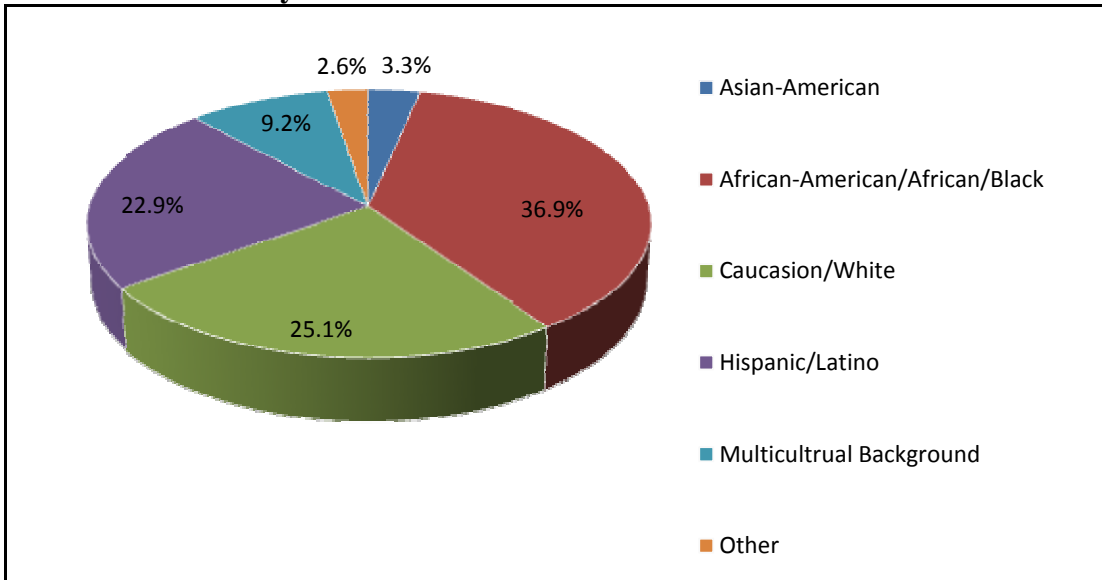
want success, yet they want to disown the appearance of working at it because nerdiness

has become synonymous with girliness" (Theis, 2006).

CHART 2: Ethnicity – Active GEAR UP Cohort Members
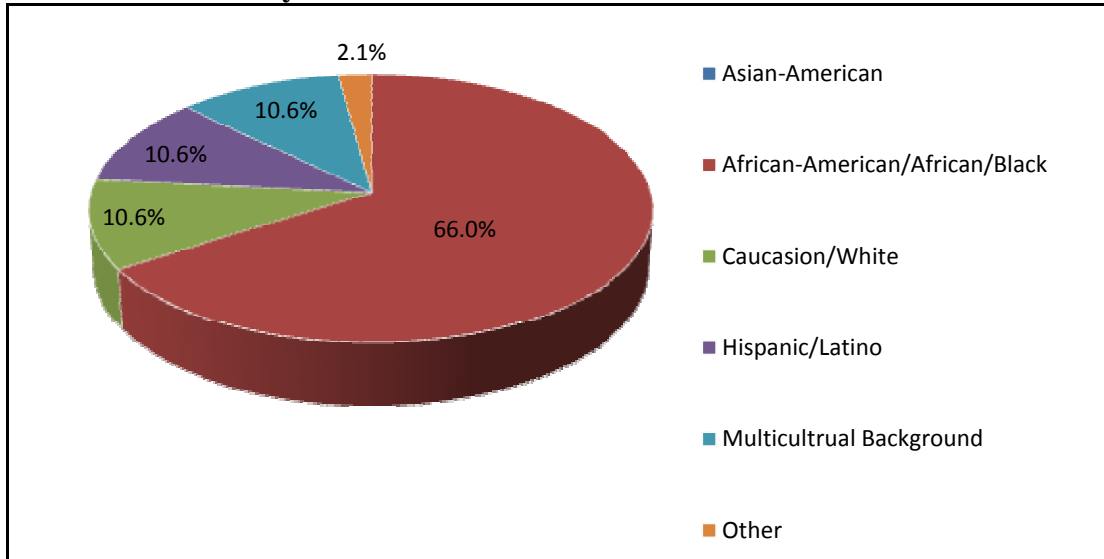
Of those 271 members of the cohort who did not partake in any GEAR UP-

sponsored activities, the racial diversity is as follows: African American/African/Black:

36.9 percent; Asian American: 3.3 percent; Caucasian/White: 25.1 percent;

Hispanic/Latino: 22.9 percent; Multicultural: 9.2 percent; and Other: 2.6 percent (see

Chart 3 below). Females comprised 44.3 percent of the sample, males accounted for 55.7

percent.

CHART 3: Ethnicity – Passive GEAR UP Cohort Members

Pie chart with the following values and legend:

- 3.3% — Asian-American
- 36.9% — African-American/African/Black
- 25.1% — Caucasion/White
- 22.9% — Hispanic/Latino
- 9.2% — Multicultrual Background
- 2.6% — Other

The findings of the above reported demographics suggest that, in terms of active membership, GEAR UP is attracting the right ethnicities for participation. In other words, the grant is focused on increasing the percentage of low-income students who pursue and succeed in post-secondary education, and low-income students are, more often than not, of the ethnic minority. African Americans, for example, account for 66.0 percent of active members, yet they are only 41.2 percent of the entire cohort population.

Efforts to Control for Internal and External Validity/Measurement Reliability

Since the type of design that was used for the purpose of this study is non-experimental, threats to internal validity, including history, selection, maturation, and experimental mortality, cannot be controlled. Though such threats cannot be eliminated, the information provided by the single group posttest design still provides useful feedback. First, the study indicates whether the intervention (GEAR UP participation) worked as well as expected. Second, the study assists in identifying additional issues that help in understanding the relationship between GEAR UP participation and post-secondary education attainment.

The findings obtained through this research may be extended and generalized to other GEAR UP programs and even possibly beyond to other college access and preparatory programs. Since the GEAR UP services are mandated and uniform across all GEAR UP grant programs, and because the conditions of this study are structured around those mandated services, the study should have the ability to be replicated with other GEAR UP grant programs across the country. Replications of the study with other GEAR UP grant programs (with different cohorts of students) will increase the external validity of this research.

Since the data required for this study are mandated by the U.S. Department of Education and therefore uniform, what is being measured will not change. As a result, the measurements should yield the same results time after time. Furthermore, each measure has and will continue to be assigned the same result (1 point for participation per individual service). Thus, I will be able to conclude that differences between subjects are real and not due to the measure or the measuring process. Using precise procedures to establish reliability will limit the amount of random error associated with the research.

Methods of Data Analysis

Contact logs that document each student's name, service(s) received, and length of time the service(s) was received, have and will continue to be taken each and every time any student in the KSU/MHS GEAR UP cohort participates in one of the GEAR UP services. The data on all variables will be collected for each student in the cohort for the remaining two years they are in high school. Upon graduating from high school, the response variable (whether or not a student plans to pursue post-secondary education) will be obtained from Marietta High School records and confirmed with each student in the cohort via personal contact. A simple one-way, single factor analysis of variance

configured by the appropriate statistical software (i.e., Minitab, NCSS, SPSS, etc.) to determine if GEAR UP participation yields significantly higher student planning to attend post-secondary education will be noted. Such an ANOVA will confirm the GEAR UP grant program has a significant impact on students' pursuit of post-secondary education. The test will compare two groups (Class of 2011 passive members' average response for attending post-secondary education vs. Class of 2011 active members' average response for attending post-secondary education) of the response data to pursue post-secondary education. Though the passive GEAR UP average and the active GEAR UP average may appear close in magnitude, it is necessary to run a statistical tool such as ANOVA that takes into account the variability of the data. Then, one can say to a specific degree of confidence whether or not members of the KSU/MHS GEAR UP cohort participating in GEAR UP-sponsored activities had a statistically higher probability of planning to pursue post-secondary education than non-participating members.

Analysis, Discussion, and Results

The data was exported from EXCEL and imported into MINITAB for analysis. There were missing data denoted by a blank, but each was converted into a "*" symbol. The worksheet was saved as an .MTW file.

The following variables had no missing data; "id," "last," "first," "tutoring," "mentoring," "advising," "minutes," "age," "gender," and "active_min." The following variables had at least one missing data value; "computer_lab," "college_visit," "job_site_visit," "educational_field_trip," "workshop," "family_event," "culture," "ethnicity," "heard_of_GEAR_UP," "heard_of_College_Club," "absences," "cum_GPA," "core_GPA," "cc_attendance," "pursue_post_secondary_education," and

"pursue_post_secondary_education_2." For all analyses, the missing data was excluded to address any sparse data concerns.

Bar graphs of absences, cumulative GPA, and core GPA (by active versus passive membership) in the GEAR UP cohort were generated to examine whether the data demonstrated the characteristics associated with a normal, bell-shaped distribution (see Charts 4, 6, and 8). Further, normal probability plots and descriptive statistics were also generated (see Charts 5, 7, 9 and Table 1). Assumptions underlying a normal distribution include the mean, median, and mode being the center point of the distribution wherein 50 percent of the cases lie. This, however, was not the case as evidenced by the histograms and normal probability plots. Rather, they suggest that the data are non-normal. The descriptive statistics report below is followed by discussion of the results including relevant graphs and plots.

TABLE 1: Descriptive Statistics: Absences, Cum_GPA, Core_GPA

| Variable	ACTIVE_MIN	N	N*	Mean	StDev	Minimum	Median	Maximum
Absences	A	47	13	7.79	8.37	1.00	5.00	34.00
	P	380	58	8.937	10.260	1.000	5.000	93.000
Cum_GPA	A	58	2	2.572	0.774	1.382	2.364	4.297
	P	394	44	2.4411	0.8904	0.5000	2.3750	4.3680
Core_GPA	A	58	2	2.315	0.886	1.043	2.082	4.396
	P	389	49	2.1705	1.0009	0.2860	2.0400	4.5230

Note: A = active members; P = passive members

The average number of full day 10th grade absences for active GEAR UP members is approximately 7.8 days whereas the average number of full day absences for passive GEAR UP members is approximately 8.9 days (Table 1). The 10th grade absences of both active and passive members are non-normal, meaning the graphs do not follow a bell-shaped distribution, as observed by the below bar graph and normal probability plot (Charts 4 and 5). A one-way, single factor ANOVA was conducted to

determine if the means of the two groups are statistically different (i.e., to determine if active GEAR UP members had a statistically significant lower number of absences compared with passive GEAR UP members). Normality (symmetry) of the data was tested because it is a basic assumption for generating ANOVA. Though ANOVA may not be the most powerful test available for a non-normal distribution, it was still utilized because it is relatively robust against non-normality. Further, it is important to note that absences are technically count data, however, since the range of data is high, it was treated as continuous. Ideally, the cumulative absences for both 9th and 10th grade would have been analyzed had the 9th grade absence data been available.

There is not a statistically significant difference between the active and passive GEAR UP members 10th grade absences at a 95 percent confidence level (α =0.05, p = 0.461, F= 0.54). The predetermined alpha level of significance is 0.05. The corresponding probability level (P-value), which in this case is 0.461, shows the probability of the result not being due to chance alone. In other words, there is a 46.1 percent chance that the two group means are statistically the same. Since the P-value is greater than the alpha level of 0.05, it indicates that the average absences between active and passive members is non-significant.

CHART 4: Bar Graph of Absences by Active versus Passive Membership
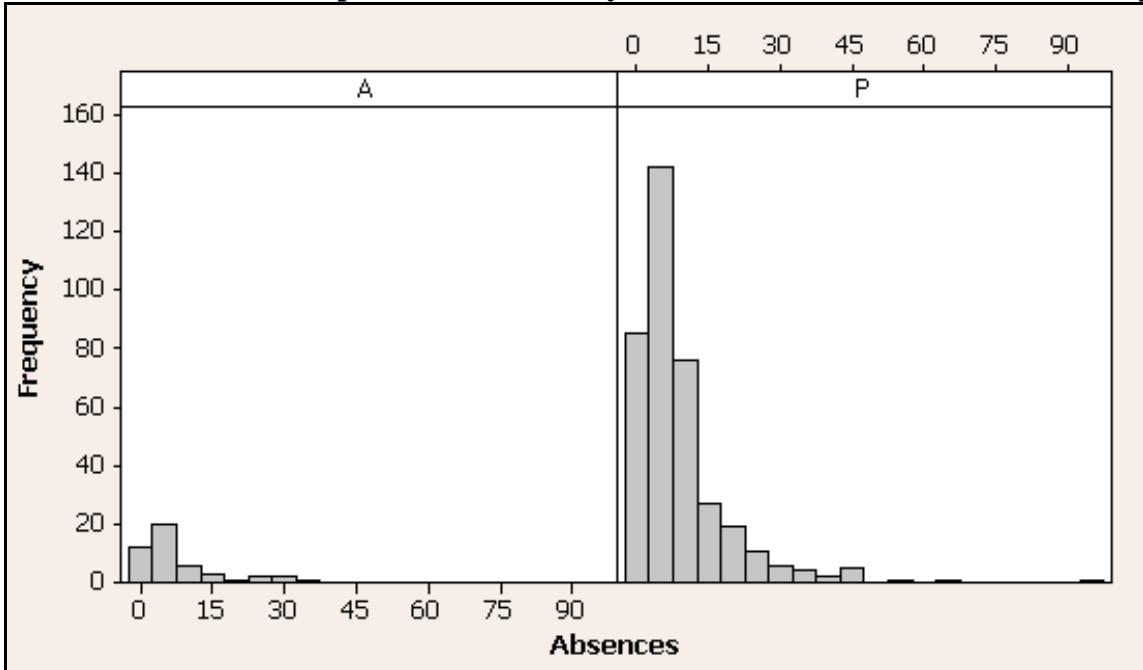
Note: A = active members; P = passive members

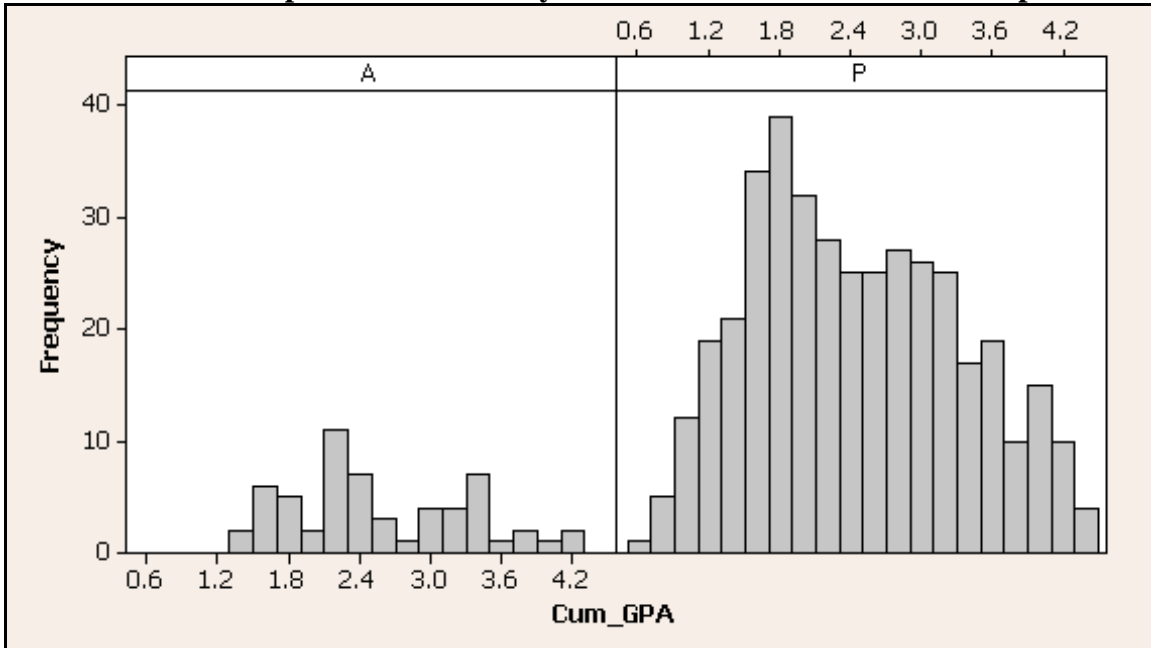**CHART 5: Normal Probability Plot of Absences**
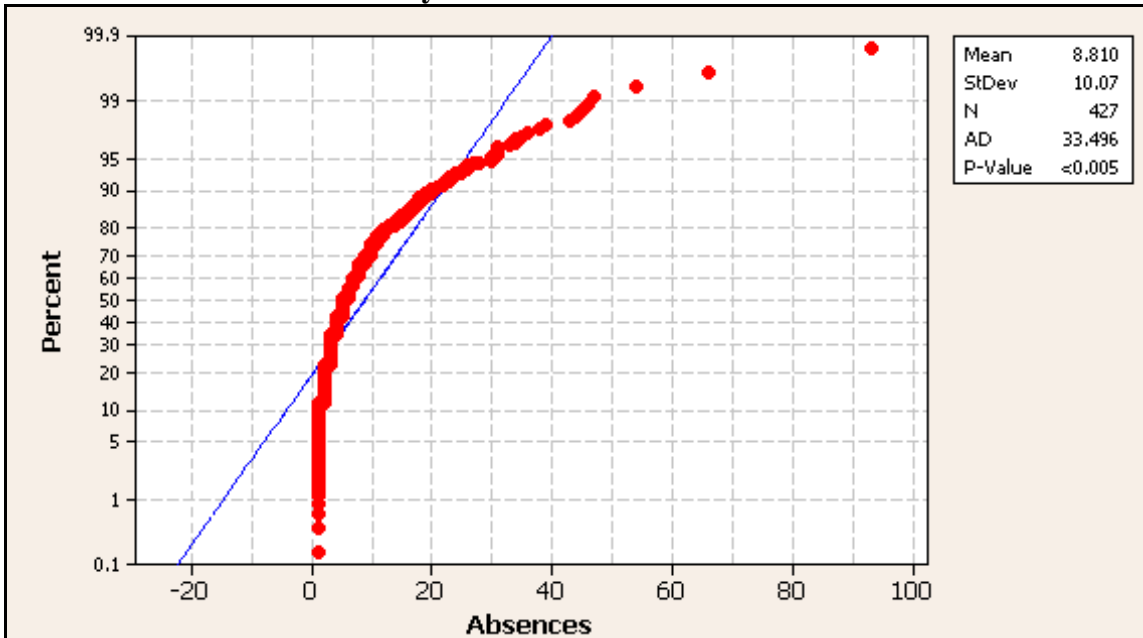
The average cumulative GPA for active GEAR UP members is approximately 2.57 whereas the average cumulative GPA for passive GEAR UP members is 2.44 (Table 1). The cumulative GPA of both active and passive members is also relatively non-normal as observed by the below bar graph and normal probability plot (Charts 6 and 7).

Regardless, an ANOVA was again conducted to determine if active members had a statistically significant higher cumulative GPA compared with passive members.

There is not a statistically significant difference between the average cumulative GPAs of active and passive GEAR UP members at a 95 percent confidence level (α =0.05, p = 0.290, F= 1.12). The predetermined alpha level of significance is 0.05. The corresponding probability level (P-value) of 0.290 indicates that there is a 29 percent chance that the two group means are statistically equivalent.

CHART 6: Bar Graph of Cum_GPA by Active versus Passive Membership

Note: A = active members, P = passive members

CHART 7: Normal Probability Plot of Cum_GPA
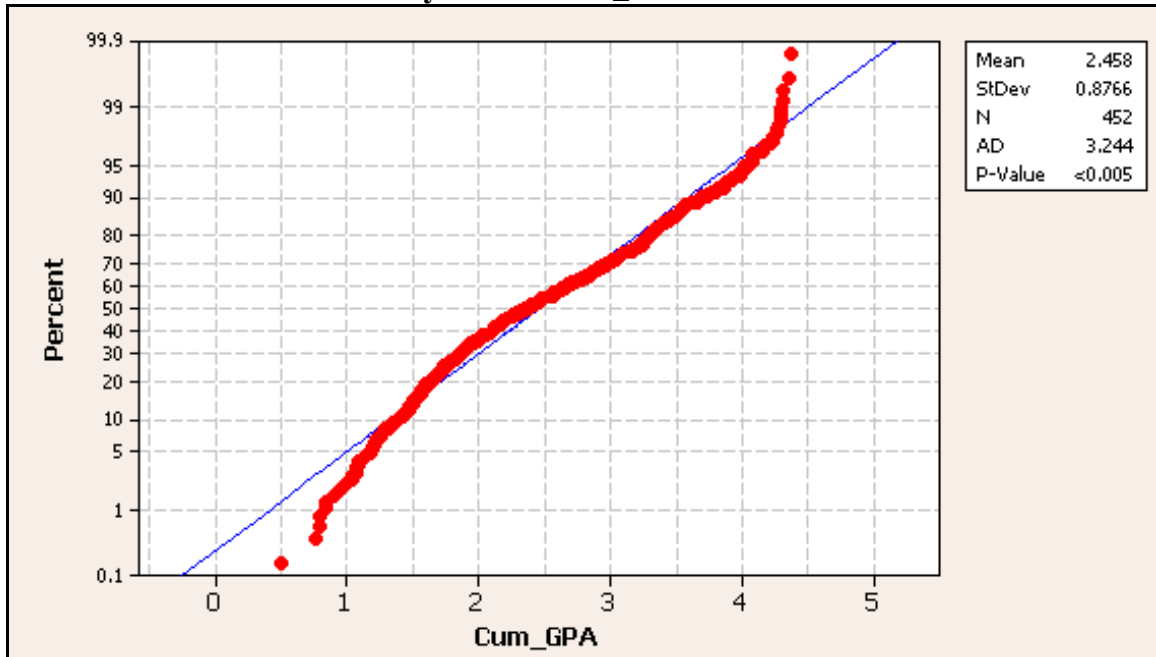
The average core GPA for active GEAR UP members is approximately 2.32 whereas the average core GPA for passive GEAR UP members is 2.17 (Table 1). The core GPA of both active and passive members is also non-normal as observed by the below bar graph and normal probability plot (Charts 8 and 9). An ANOVA was conducted to see if active GEAR UP members had a statistically significant higher average core GPA compared with passive members.

There is not a statistically significant difference between the core GPAs of active and passive GEAR UP members at a 95 percent confidence level (α =0.05, p = 0.298, F= 1.08). The predetermined alpha level of significance is 0.05. The corresponding probability level (P-value) is 0.298, meaning that there is a 29.8 percent chance of the two group means being statistically equivalent.

CHART 8: Histogram of Core_GPA by Active versus Passive Membership
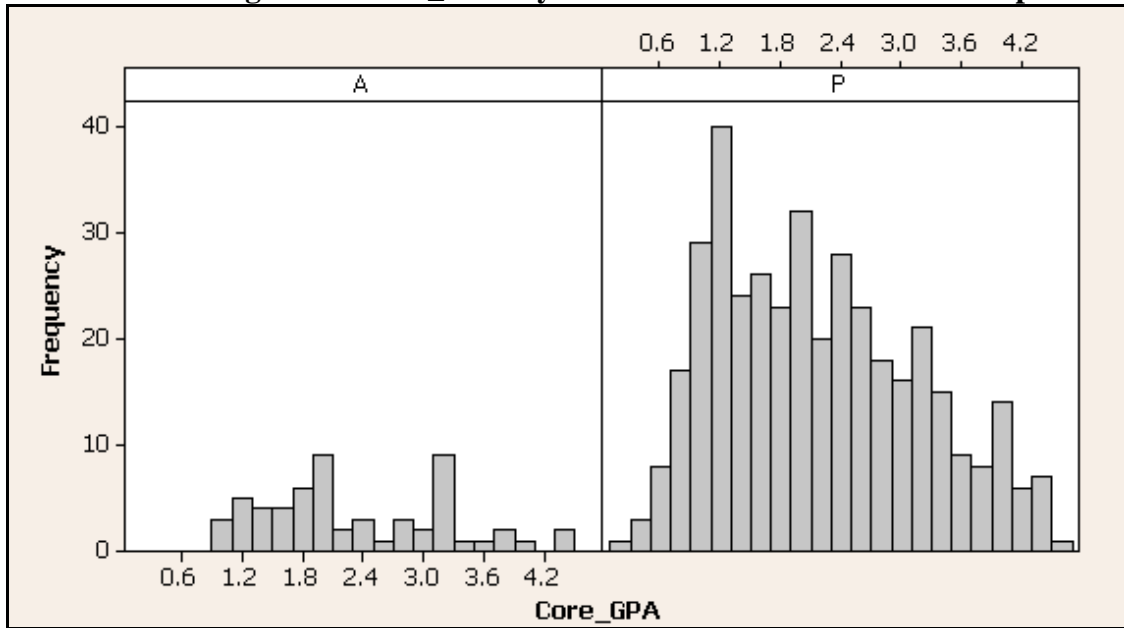
Note: A = active members, P = passive members

**CHART 9: Normal Probability Plot of Core_GPA**
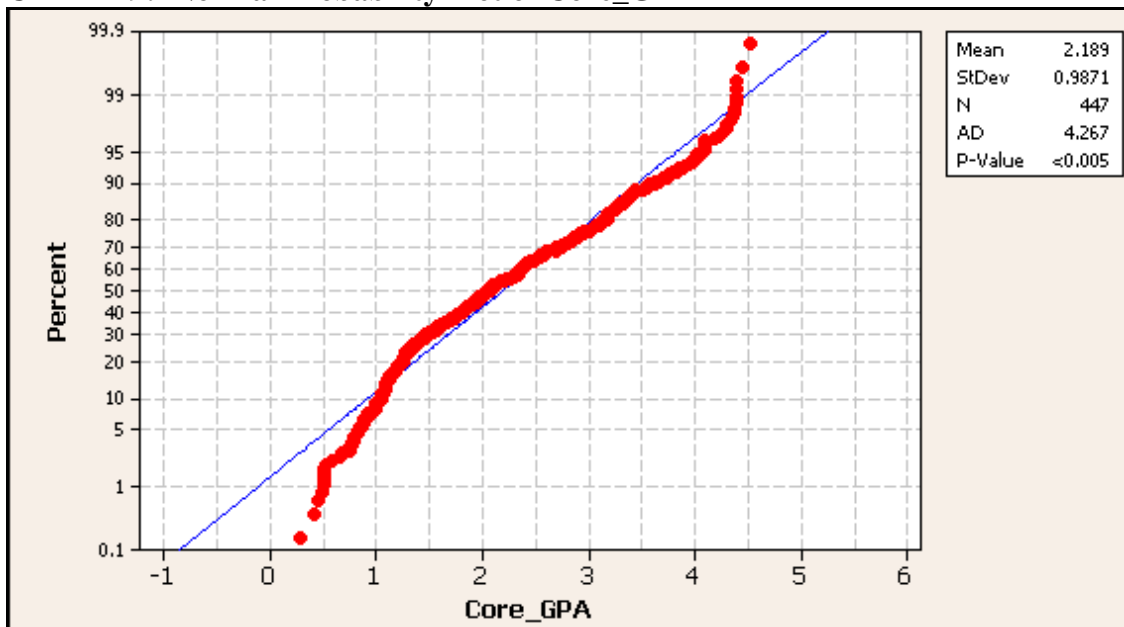
The basic statistics reported above suggest that, on face-validity, active GEAR UP members, those who participated in GEAR UP-sponsored activities, had fewer absences, higher cumulative GPAs, and higher core GPAs on average. However, more detailed exploration through ANOVA revealed that, from a statistical standpoint, there is not sufficient evidence to suggest that significant differences between the two groups exist.

For future studies involving GPA, analysis can be conducted using either cumulative GPA or core GPA without the need for both. Justification of the above comes from a linear regression analysis between cumulative and core GPA. As one can see in Chart 10 below, the scatterplot between cumulative and core GPA suggests a high, positively increasing correlation. The model has an r-squared value of 96.8 percent (Table 2). In other words, core GPA (explanatory variable) accounts for approximately 97 percent of the variation in cumulative GPA (response variable). The remaining 3 percent can be explained by unknown variables. Cumulative GPA can be predicted if given core GPA using the following equation: Cum_GPA=0.555+0.870(Core_GPA). There were 447 observations used to form this model; 51/498 observations were missing values. The residual plots can be viewed in the Appendix (Chart A-1). Reporting of the adjusted r-squared value is not needed because there is only one predictor variable.

TABLE 2: Reporting of R-Squared Value

```
447 cases used, 51 cases contain missing values


Predictor        Coef    SE Coef        T      P
Constant      0.55489    0.01812    30.62  0.000
Core_GPA     0.869746   0.007548   115.22  0.000


S = 0.157351   R-Sq = 96.8%   R-Sq(adj) = 96.7%
```

CHART 10: Scatterplot of Cum_GPA vs Core_GPA
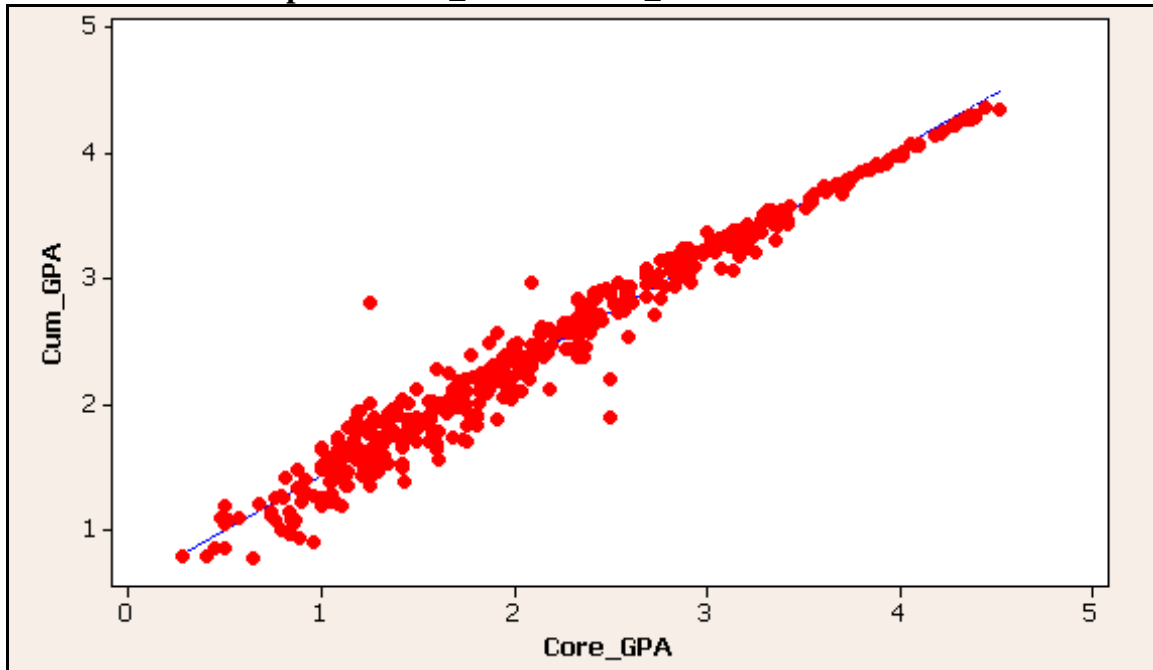
The average cumulative GPA by ethnic group is reported in Table 3. Although the standard deviations for each ethnic group are high, the range of average cumulative GPAs by ethnic group suggest that further statistical analyses be explored. Generation of a Tukey's test (a multiple comparison statistical test) of cumulative GPA by ethnicity revealed that there are, in fact, statistically significant differences: Caucasian/White students' average cumulative GPA (3.104) is higher than African American/African/Black and Hispanic/Latino students' average cumulative GPAs (2.389 and 2.046 respectively). This serves as confirmation that the need for programs like GEAR UP does exist, as there continue to be large disparities in education between minorities and their Caucasian/White counterparts. Additional statistically significant differences of average cumulative GPA by ethnic group can be viewed in Table 4. Charts 11 and 12 also show the histograms of the cumulative GPA by ethnic group.

TABLE 3: Descriptive Statistics of Cum_GPA

Variable	Ethnicity	N	N*	Mean	StDev	Minimum	Median	Maximum
Cum_GPA	AA	9	0	2.988	0.737	1.714	2.971	3.984
	AB	129	2	2.3892	0.7974	0.7690	2.3130	4.3030
	CW	72	1	3.1040	0.8069	1.4690	3.0450	4.3680
	HL	67	0	2.0458	0.6359	0.5000	2.0000	3.5310
	MB	29	1	2.354	0.827	1.188	2.250	4.069
	O	8	0	2.034	0.797	0.900	2.230	3.292

Note: AA = Asian American, AB = African American/African/Black,
CW = Caucasian/White, HL = Hispanic/Latino, MB = Multicultural Background,
and O = Other

TABLE 4:
Least Squares Means Differences Tukey Honestly Significantly Different (HSD)

Level			Least Sq Mean
CW	A		3.1039861
AA	A		2.9884444
AB		B	2.3892093
MB		B C	2.3539310
HL		C	2.0458209
O		B C	2.0336250

Levels not connected by same letter are significantly different.

CHART 11: Bar Graph of Cum_GPA by Ethnicity
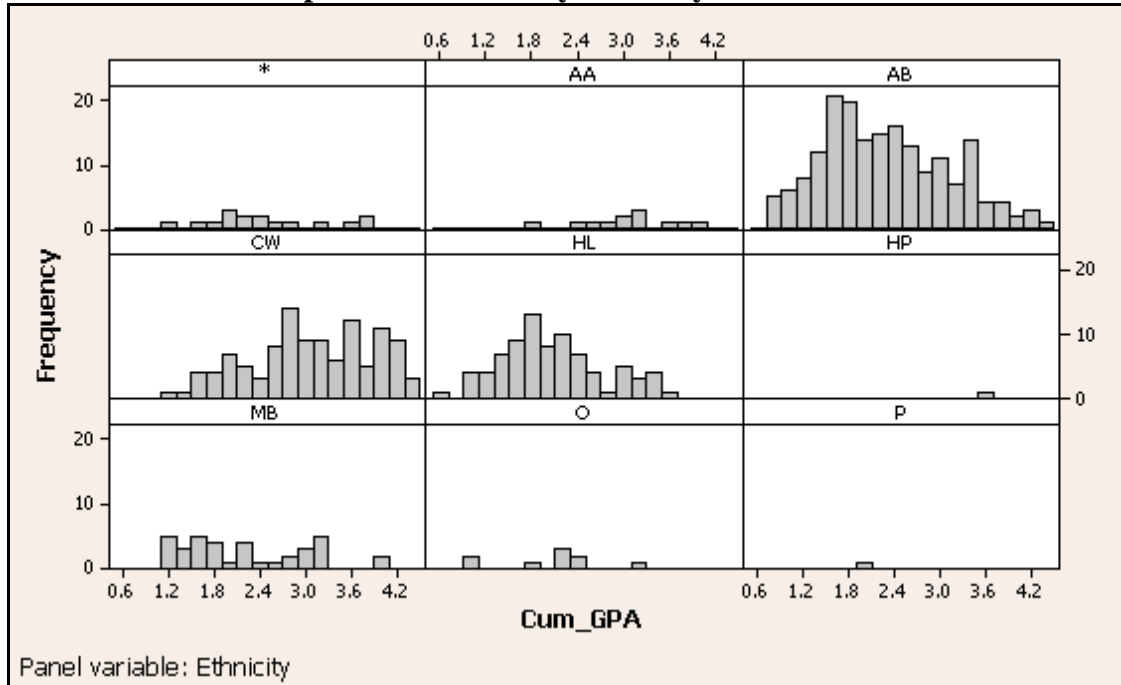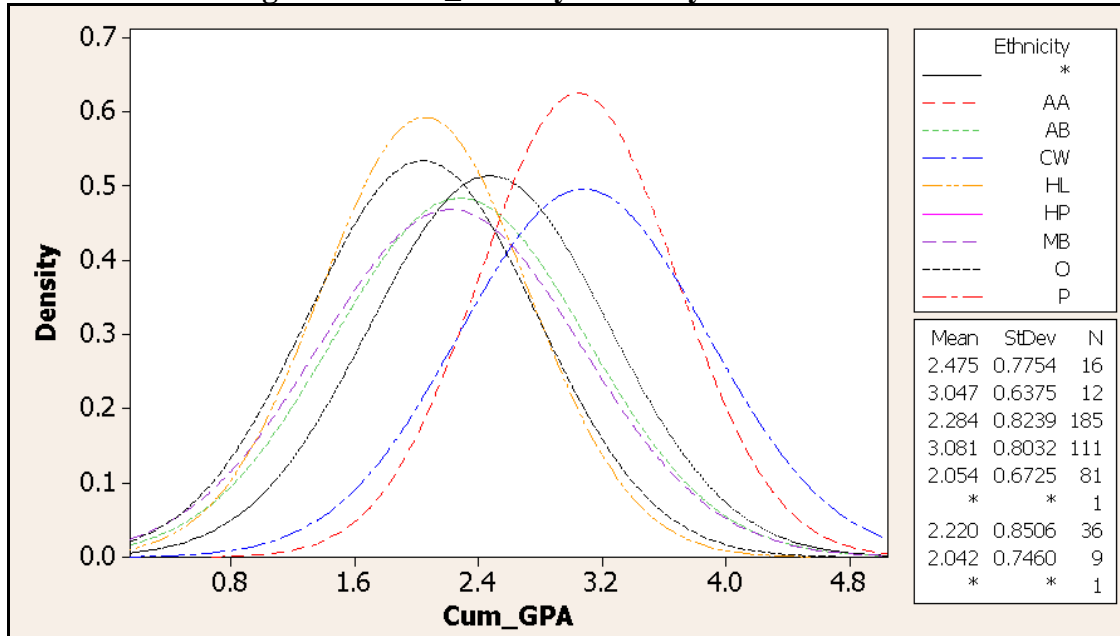

Panel variable: Ethnicity

CHART 12: Histogram of Cum_GPA by Ethnicity

As evidenced by Chart 13 below, the scatterplot between PSAT composite score and cumulative GPA suggests a positively increasing correlation. The linear regression analysis suggests that if one knows a student's cumulative GPA, one can predict PSAT composite score to a reasonable degree. The model has an r-squared value of 57.6 percent (Table 5), meaning that 57.6 percent of the variance in a student's PSAT score is explained by his/her cumulative GPA. PSAT composite score can be predicted if given cumulative GPA using the following equation: PSAT=56.3+25.5(cum_GPA). There were 353 observations used to form this model; 16/369 observations were missing values. The residual plots can be viewed in the Appendix (Chart A-2).

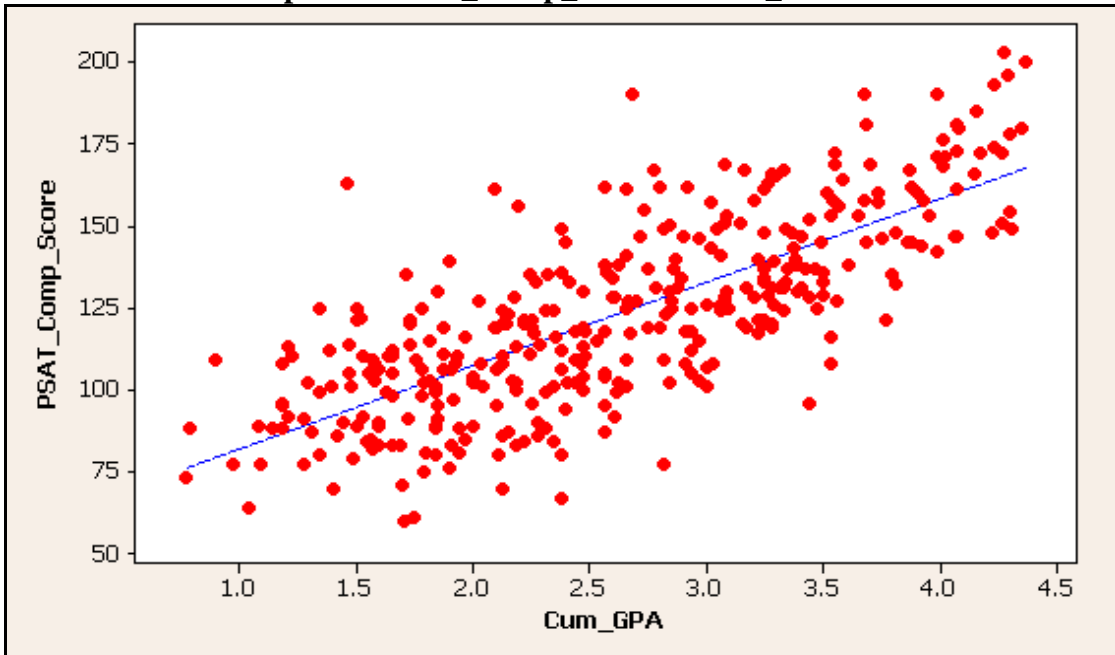**CHART 13: Scatterplot of PSAT_Comp_Score vs Cum_GPA**

TABLE 5: Regression Analysis of PSAT_Comp_Score versus Cum_GPA

```
The regression equation is
PSAT_Comp_Score = 56.3 + 25.5 Cum_GPA


353 cases used, 16 cases contain missing values


Predictor     Coef   SE Coef      T      P
Constant    56.304     3.209  17.54  0.000
Cum_GPA     25.474     1.166  21.84  0.000


S = 18.7339   R-Sq = 57.6%   R-Sq(adj) = 57.5%


Analysis of Variance

Source            DF      SS       MS      F      P
Regression         1  167449   167449  477.12  0.000
Residual Error   351  123187      351
Total            352  290636
```

Because of the results plotted and exhibited in the pie charts below (Chart 14), it was determined that an ANOVA should be conducted to determine whether active GEAR UP members have a propensity towards pursuit of post-secondary education, compared with passive members, that can be statistically validated.

CHART 14:
  Responses to Pursuit of Post-Secondary Education by Active/Passive Membership
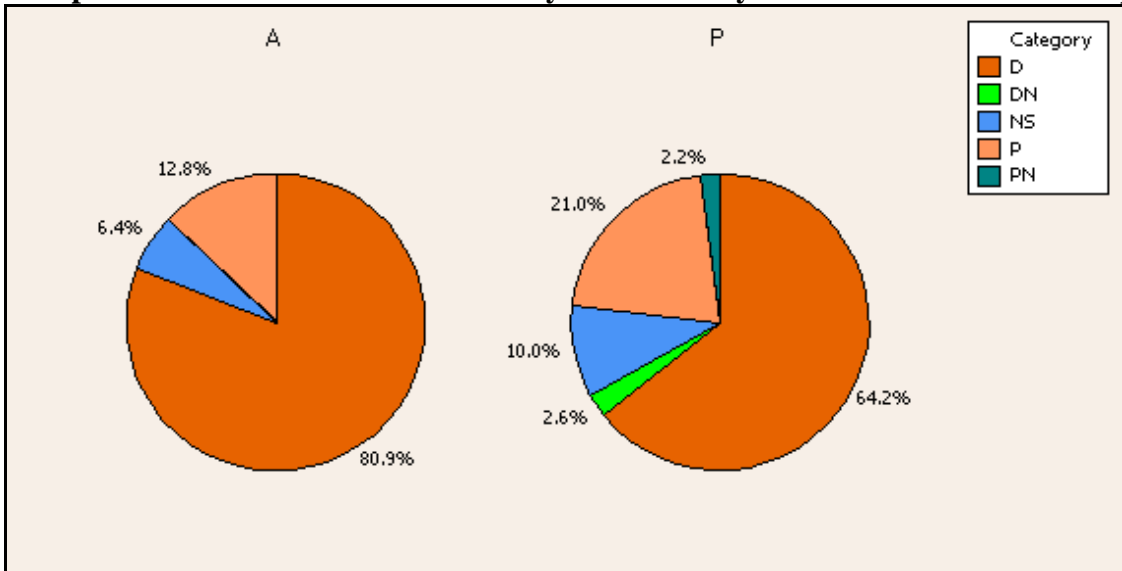
Note: A = active members, P = passive members

The responses of whether or not one plans to pursue post-secondary education (Definitely (D), Probably (P), Not Sure (NS), Probably Not (PN), and Definitely Not (DN)) were recoded as follows: D=5, P=4, NS=3, PN=2, and DN=1. Bar graphs by active GEAR UP members and passive GEAR UP members were generated (Charts 15 and 16). There were 318 total observations.

CHART 15:
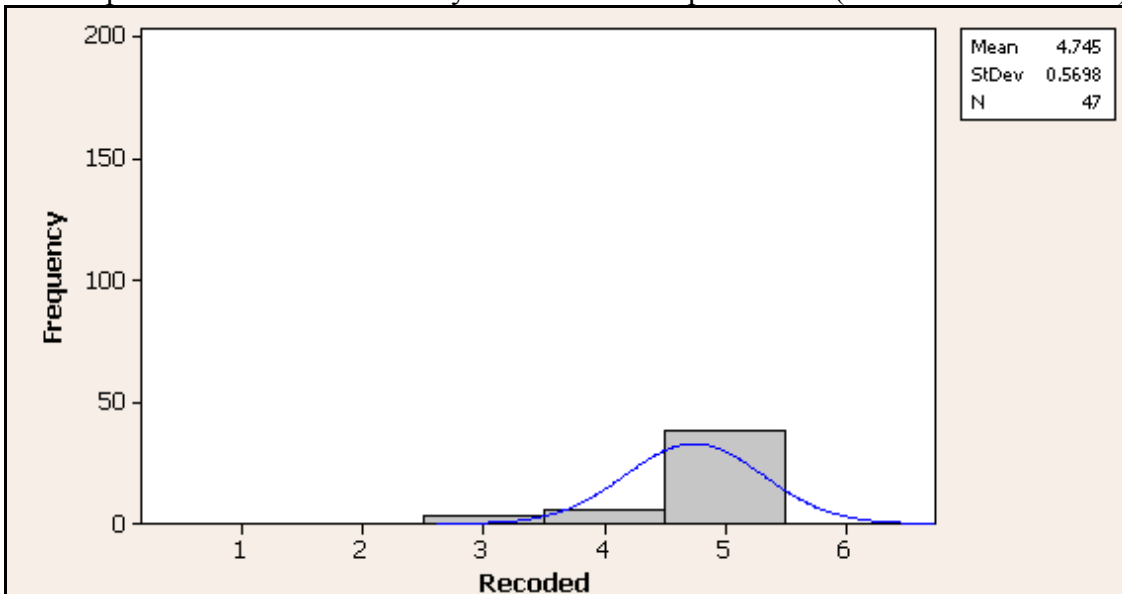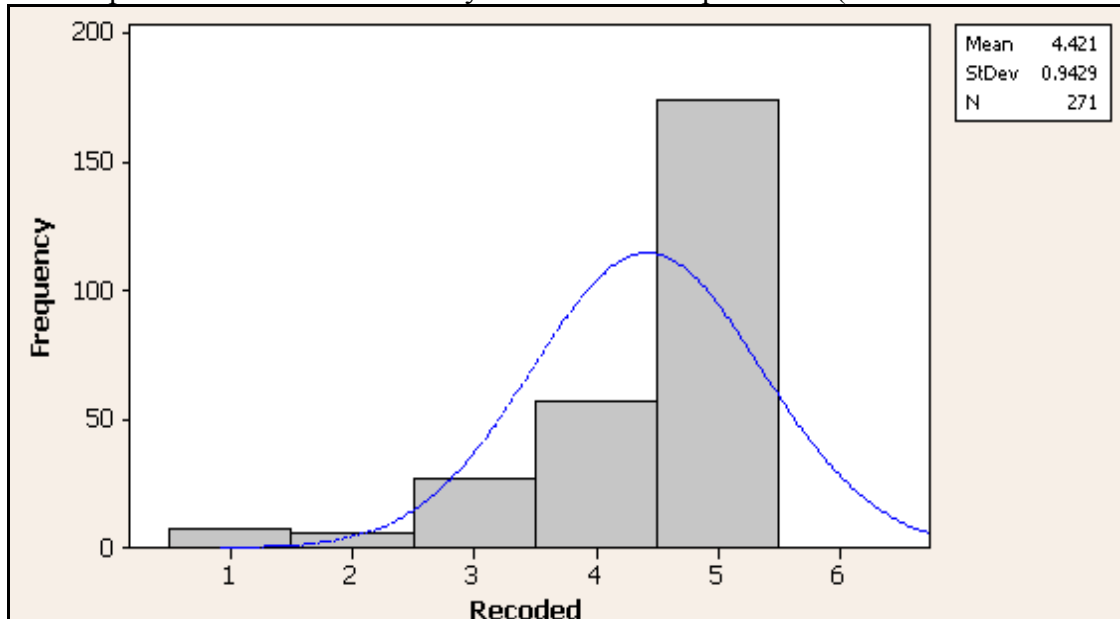Bar Graph of Active Members Only for Recoded Responses 1-5 (non-normal w/47 obs)

CHART 16:
Bar Graph of Passive Members Only for Recoded Response 1-5 (non-normal w/271 obs)

ANOVA has three basic assumptions of independent observations, equal variances, and normality. It can be assumed that the observations are independent and have similar variances. However, the data is clearly non-normal (as evidenced by the bar graphs in Charts 15 and 16). As a result, measures were taken to make the discrete data continuous and to convert (transform) the continuous data to improve normality.

First, a column of random numbers $(N\sim(0,0.15))$ was generated. A randomly generated fraction with mean equal to zero and standard deviation equal to 0.15 was added to the recoded data column of values from 1-5 (those representing the recoded responses to pursuit of post-secondary education) in order to create a continuous data set. This was done for two reasons: 1) continuous data for ANOVA is preferred and 2) students' answers in responding to the question posed are not likely to be discrete.

For example, one observation had a response of 5 (meaning, in the non-coded language, that the individual student reported he/she is definitely planning to pursue post-secondary education). A randomly generated fraction was added to 5 making it 5.09. A

mean of zero and a standard deviation of 0.15 were chosen for generating the random fraction so that the new, randomly generated number would still round up or down to the original, discrete response (i.e., 5, 4, 3, 2, or 1) in order to preserve the original answer (see Table 6 and Chart 17 below).

TABLE 6: Minitab Spreadsheet of Responses in Original Format and Recoded

C26-T	C27	C28	C29
Pursue_Post_Secondary_Ed	Recoded	Random_N(0,0.15)	Continuous_Recoded
D	5	0.140183	5.14018
D	5	-0.146030	4.85397
D	5	0.074539	5.07454
D	5	0.405962	5.40596
NS	3	0.053411	3.05341
D	5	-0.149242	4.85076
D	5	-0.087110	4.91289
D	5	-0.147137	4.85286
PN	2	0.149904	2.14990
D	5	-0.014402	4.98560
D	5	-0.032828	4.96717
D	5	-0.022724	4.97728
D	5	-0.113883	4.88612
P	4	-0.054438	3.94556
NS	3	-0.349913	2.65009

CHART 17: Bar Graph of Continuous_Recoded
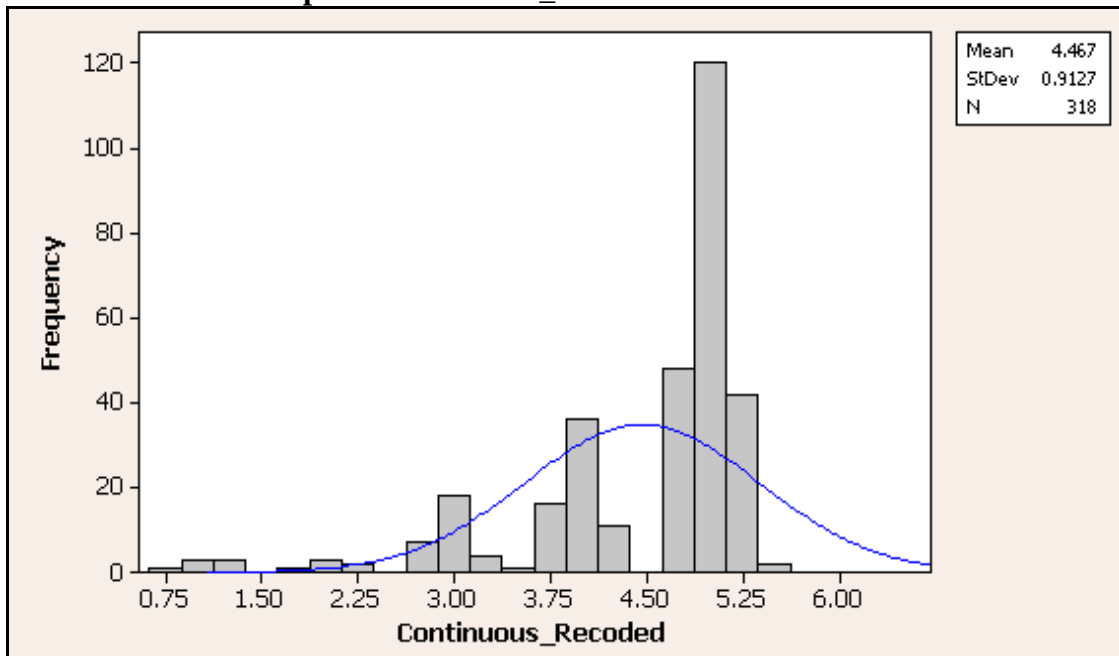
Next, a multitude of transformations were explored to encourage symmetry and normality of the continuous responses to pursuit of post-secondary education. The following transformations were applied with only minimal improvement to normality: $1/x$, e^x, natural log x, $\sqrt{x}$, x^2, arcsin($\sqrt{x}$), and the Box-Cox suggestion of $x^{3.59} \approx x^4$ (for maximizing a power transformation). The results of the transformations can be viewed in the Appendix (Charts A-3 through A-10).

Despite the results of the transformations, and because ANOVA is relatively robust against departures from normality, ANOVA was conducted anyway using the recoded continuous (non-transformed) data ($p = 0.032$, $F = 4.61$, $DF = 1$). Results of the ANOVA can be seen in Table 7 below. Evidence exists that the mean desire to attend post-secondary education responses of active GEAR UP members (4.72) is significantly higher than the mean of passive GEAR UP members responses (4.42), as $p = 0.032 <$ alpha $= 0.05$. However, one would not report these findings without attaching the caution that the normal probability plot of residuals, histogram of residuals, and the non-equal/patterned variances clearly indicate non-normality. See Chart 18 below.

TABLE 7: One-way ANOVA of Continuous_Recoded versus Active_Passive

```
Source            DF      SS      MS     F      P
Active_Passive     1    3.800   3.800  4.61  0.032
Error            316  260.286   0.824
Total            317  264.086


S = 0.9076    R-Sq = 1.44%   R-Sq(adj) = 1.13%



                              Individual 95% CIs For Mean Based on
                              Pooled StDev
Level     N    Mean    StDev  ----+---------+---------+---------+----
A        47  4.7296   0.5977            (-------------*-------------)
P       271  4.4216   0.9504  (----*-----)
                              ----+---------+---------+---------+----
                               4.40      4.60      4.80      5.00


Pooled StDev = 0.9076
```
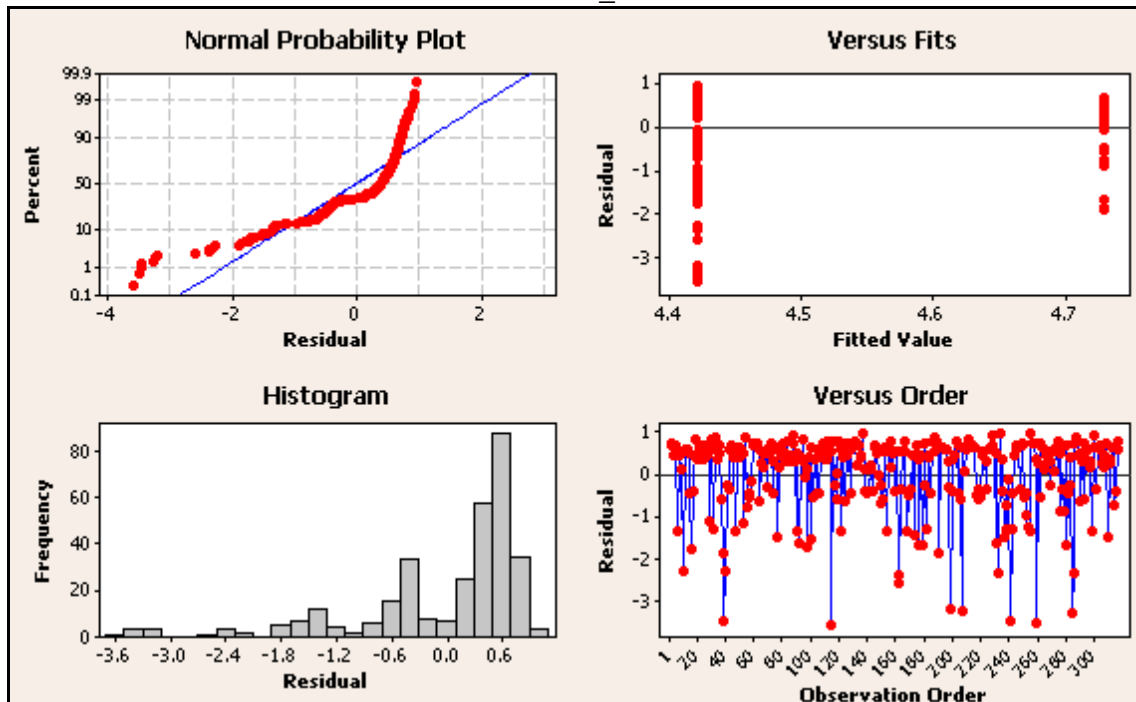
CHART 18: Residual Plots for Continuous_Recoded

The question of whether or not one plans to pursue post-secondary education was also posed in a "yes/no" format. There is some evidence to support the above ANOVA findings as roughly 98 percent of active GEAR UP members plan to pursue post-secondary education whereas 93.4 percent of the passive GEAR UP members plan to attend post-secondary education (staggeringly high percentages that will be discussed in the section below). However, because these percentages appear close in magnitude, it is difficult to assess significance. It is on this account that the ANOVA was generated.

Conclusion

The findings above indicate that a number of adjustments can be made to the KSU/MHS GEAR UP grant program to improve its impact and success. As noted in the literature review, studies have documented the negative effect high levels of school absenteeism have on academic attainment. As a result, GEAR UP might consider re-directing funds to create an attendance program in an effort to motivate students to stay in

school (justification for possible consideration of this as opposed to definite plans is addressed in the paragraph below). Reward strategies for improving attendance (as opposed to penalizing strategies) have been found to be an effective method for encouraging attendance improvement. One particular research study examined how student grades and attendance rates were affected by penalties for excessive absenteeism, and it concluded that imposing a penalty did not have an effect on attendance or grades (Moore, 2005). Rather, the study found that an emphasis on the academic benefits of class attendance proved more effective for boosting attendance and academic performance. If GEAR UP does choose to implement an attendance program, it should be structured in a fashion that implements the results of the above findings.

Though previous research has suggested that absences affect academic attainment, the linear regression analysis conducted for this study found that absences only account for 11.1 percent of the variance in KSU/MHS GEAR UP students' cumulative GPAs. This might have been due to the fact that only 10th grade absences were assessed; 9th grade absences would have been added to 10th grade absences had the data been made available to provide for a more comprehensive absence report for measuring against cumulative GPA (which itself is not limited to 10th grade coursework calculations but rather accounts for overall high school grade point average including 9th grade coursework calculations). Because the analysis conducted in this study does not show a strong relationship between attendance and academic attainment, further studies need to be conducted before it can be determined whether implementing an attendance program for the KSU/MHS GEAR UP cohort would be beneficial.

The results of the ANOVA suggest that it would be beneficial to find ways to impact more students in the cohort by making them active members (through

participation in GEAR UP-sponsored activities) since active members reported they plan to pursue post-secondary education with a statistically significant higher likelihood than their passive counterparts. On a related note, it would be wise to first focus on increasing GEAR UP awareness and outreach since 17.3 percent of passive GEAR UP members reported not having heard of the GEAR UP grant program and its purpose.

Furthermore, the focus of the KSU/MHS GEAR UP grant program should be adjusted to reflect the survey results, meaning that instead of directing resources toward exposing active members of the cohort to colleges through college visits, funds should be directed to explore ways to increase student GPAs (justification for focusing solely on increasing student GPAs as opposed to SAT scores as well is addressed in the paragraph below). A large portion of grant funds have been utilized to expose students to different colleges in the metro Atlanta area because studies have found that simple exposure to college increases the likelihood one will attend. However, survey results indicate that the GEAR UP cohort already has a high number of students reporting that they plan to pursue post-secondary education, thus exposing them to colleges is not likely influencing their decisions to go. By targeting more students in the cohort to make them active members, and thus participants in GEAR UP-sponsored activities, and by exploring ways to improve GPAs, the GEAR UP grant program will increase the number of students in the cohort who become a part of the eligible college-bound population, which would mean they not only plan to attend an institution of post-secondary education but they meet the eligibility requirements for doing so. In other words, GEAR UP does not need to continue focusing its resources on convincing students to attend college, rather GEAR UP needs to focus on factors that influence acceptance to an institution of post-secondary education.

A recent study reporting on predictors of college success indicated that high school GPA was the strongest predictor among non-Whites, accounting for over 60 percent of the variance in GPA, thus supporting Bryson's (2002) study that found that the only academic predictor of college success for African-American students was high school GPA (Kirby, White, and Aruguete, 2007). These findings are important in serving student populations with high minority demographics like that of the KSU/MHS GEAR UP cohort. They influence how much emphasis and focus the GEAR UP grant program should place on finding effective methods for increasing student GPAs.

The above analyses also suggest that a college-going culture (a desire to attend college) does, in fact, exist within the KSU/MHS GEAR UP cohort. The individual student responses to whether or not each plans to pursue post-secondary education indicate such and on an astoundingly high level even without considering the characteristics of the cohort. The vast majority of GEAR UP members (93.4 percent), regardless of active or passive status, reported they plan to attend college (which may be, like the Hawthorne effect, an artefact of the research). One of the larger goals of the GEAR UP grant program is to create a college-going culture. Since the individual student responses of whether or not each plans to pursue post-secondary education were not recorded during each of the years of the grant preceding the current one, it is difficult to ascertain whether GEAR UP was influential in or responsible for creating this culture or if it was already in place.

A recent study found that schools with greater proportions of minority students, like the one in which the KSU/MHS GEAR UP cohort operates, are, counterintuitively, associated with higher levels of students' expectations to attend college and graduate with a four-year degree (Frost, 2007). Thus, students in schools with large shares of minority

students are more likely to have ambitious educational goals of pursuing post-secondary education. Another study confirming high college attendance expectations was conducted by a Boise State University TRiO Program (also an early intervention, educational opportunity program for increasing low-income students' access to college). Through a survey similar to that administered in this study, only seven high school seniors out of 83 (approximately 8 percent) from various urban high schools across the state of Idaho reported no plans to pursue post-secondary education, meaning that a striking 92 percent reported they were planning to pursue post-secondary education (Boise State University, 2008). Yet, in this particular study, nearly half of the students (40 percent) surveyed identified themselves as Caucasian, 28 percent as Latino, 6 percent as Asian, and 2 percent as Other. Both studies provide evidence to suggest that low-income students have high expectations for pursuing post-secondary education, yet the fact remains that the majority do not follow through with those initial expectations.

It will be interesting to learn through continuation of this study if and when the KSU/MHS GEAR UP student responses to whether or not one plans to pursue post-secondary education will change to reflect what is likely to result—which is that merely 40 percent will further their education by immediately enrolling in a Georgia college or technical school as noted in the introduction. The hope is that GEAR UP can pinpoint that time period when reality appears to set in, if it does so, to determine its causes and make changes to markedly improve that percentage.

Because of GEAR UP's lack of annual reporting data (except for the current year) regarding the question of whether or not each student plans to pursue post-secondary education and because of the above findings of this report, GEAR UP plans to continue collecting data from the students in its cohort in addition to collecting data across

different cohorts (namely the class preceding that of the GEAR UP cohort and the class following that of the GEAR UP cohort—the MHS Classes of 2010 and 2012) on an annual basis beginning next year. An ANOVA will be generated against the three separate cohorts to determine if students in the GEAR UP cohort report higher means of pursuing post-secondary education on a statistically significant level.

Most importantly, this research, originally devised to evaluate one particular GEAR UP grant program's impact, has not only resulted in recommendations specific to the KSU/MHS GEAR UP grant program; it has resulted in general recommendations for all educational opportunity grant programs serving low-income students. Questions remain about the success of such grants—particularly those like the KSU/MHS GEAR UP grant experiencing challenges that result from school district decisions that, in truth, almost nullify its impact. The school district, to put it bluntly, appears more interested in the funds associated with the grant than the life-changing opportunities it can provide for its students.

Increasing the effectiveness of educational opportunity grants for low-income/minority students requires a serious commitment from the schools in which these grants operate. The success of the St. Olaf College GEAR UP grant program serves as evidence. Its target schools place a high value on GEAR UP goals and objectives. GEAR UP-sponsored activities have been integrated into the classroom and have thus become a part of everyday curriculum. GEAR UP staff conduct presentations to the students in the GEAR UP cohort on a daily basis. In this fashion, GEAR UP staff are able to interface with all of the students in the GEAR UP cohort, and because all of the students in the cohort are participating in GEAR UP-sponsored activities, they are all active members. The target schools served by the St. Olaf College GEAR UP grant

program have proven that a vested-interest on the part of the school is critical. Specific successes of the St. Olaf College GEAR UP grant program, based on this classroom interaction model, are discussed in the literature review.

Increasing the effectiveness of educational opportunity grants for low-income students may also require more drastic efforts—efforts that extend beyond fostering change within the school system. There have been huge strides made since *Brown v. Board of Education* and the subsequent education legislation, yet they have not gone far enough with follow-through. This study has called attention to problems that have lingered persistently because they have never been sufficiently addressed. Despite more than a half century of federal attempts to assist the economically disadvantaged, the United States appears insufficiently better off regarding low-income/minority education. The above-measured differences in cumulative GPA by ethnicity provide evidence of this: Caucasian students' average cumulative GPA of 3.104 is statistically significantly higher than African-American students' average cumulative GPA of 2.389. The United States is far from where it should be had it pursued the implementation of federal efforts as seriously and intensely as they require.

The findings of this study suggest that active members report plans to pursue post-secondary education on a statistically higher level than passive members. However, active members account for just 10 percent of the entire cohort. Furthermore, 93.4 percent of the entire cohort, whether active or passive, report plans to advance their education after high school. This raises the question: If the grant is not having a significant impact in terms of the number of students it is influencing, what other forces are operating to produce the staggeringly high results across the whole cohort?

Moreover, why are the results not reflecting the likely reality that a mere 40 percent will pursue education beyond high school?

Perhaps efforts to assist the economically disadvantaged need to focus on, not only fostering change within the school system, but fostering change within "ghetto" culture. Justification for a cultural transformation comes from a common phrase with a twist: If it is true that "one can take the student out of the 'ghetto,' but cannot take the 'ghetto' out of the student," then perhaps the focus needs to be shifted to changing the "ghetto" culture. By allowing federal education grants to operate in this capacity, the federal government would be taking a multi-pronged approach to combating a long-standing problem—as discrepancies between minorities and their Caucasian/White counterparts continue to exist despite decades of attempts to narrow the gap.

Much of the culture in which one is embedded revolves around symbols whether tangible or iconic. Harrison Trice and Janice Beyer, of the School of Organizational Culture Theory, explain that cultural change involves numerous changes reflecting a new pattern of values, norms, and expectations. Federal programs like GEAR UP might consider redirecting their efforts to create a culturally renewed value on educational attainment, in which the pursuit of post-secondary education not only becomes the norm but the expectation. There are three specific types of cultural change: revolutionary/comprehensive, subunit/subculture, and a more gradual/incremental, but comprehensive reshaping of a culture—the last two of which are applicable at present (Trice and Beyer, 1993). Changing a "ghetto" culture through a federal program would likely begin with transforming the mindsets of a small population (subculture) first and lead gradually into a complete redesign of the entire culture, thus impacting larger populations. Trice and Beyer propose eight specific considerations for doing this: 1)

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capitalizing on propitious moments, 2) combining caution with optimism, 3) understanding resistance to culture change, 4) changing many elements, but maintaining some continuity, 5) recognizing the importance of implementation, 6) selecting, modifying, and creating appropriate cultural forms, 7) modifying socialization tactics, and 8) finding and cultivating innovative leadership (Trice and Beyer, 1993). This is something that should be explored further if the federal government is to produce lasting reform, particularly in educating disadvantaged populations.

In sum, the KSU/MHS GEAR UP cohort's demographic profile does not portend educational success. Most qualify for free or reduced price lunch, and are thus from low-income households, and over half represent ethnic and racial minorities. Since the GEAR UP program was only recently incepted, little data exists to validate its effectiveness. The little data that does exist suggests that GEAR UP is addressing the complex factors putting so many in the school system at risk for academic failure. However, results from this study suggest that the factors putting so many at risk for academic failure may actually be beyond the school system and embedded in the culture. It leaves one to ponder: Are there better ways to best serve and prepare low-income students for pursuing post-secondary education? Further research should be explored.

Limitations

As with any study, there is room for improvement. One possibility for the ANOVA complications concerning the main hypothesis is that the survey administered to the students in the GEAR UP cohort was restricted in terms of questions because of my statistical knowledge. Additional questions could have been posed to the students regarding their response of whether or not to pursue post-secondary education, yet such

questions likely resulting in probability analysis through the use of Probit or Logit regression would have been outside of my current knowledge base.

Furthermore, the sample population was composed of a select group of high school students (those in the KSU/MHS GEAR UP cohort). Had I had access to other cohorts in the school, those who are also basing their perceptions on what they foresee in the future, the results might have been different. In addition, had I had access to students who graduated from Marietta High School, they might have provided additional factors/variables that contributed to either their absence from or advancement to college—variables which GEAR UP could possibly control and influence with students in its cohort.

APPENDIX

CHART A-1: Residual Plots for Cum_GPA
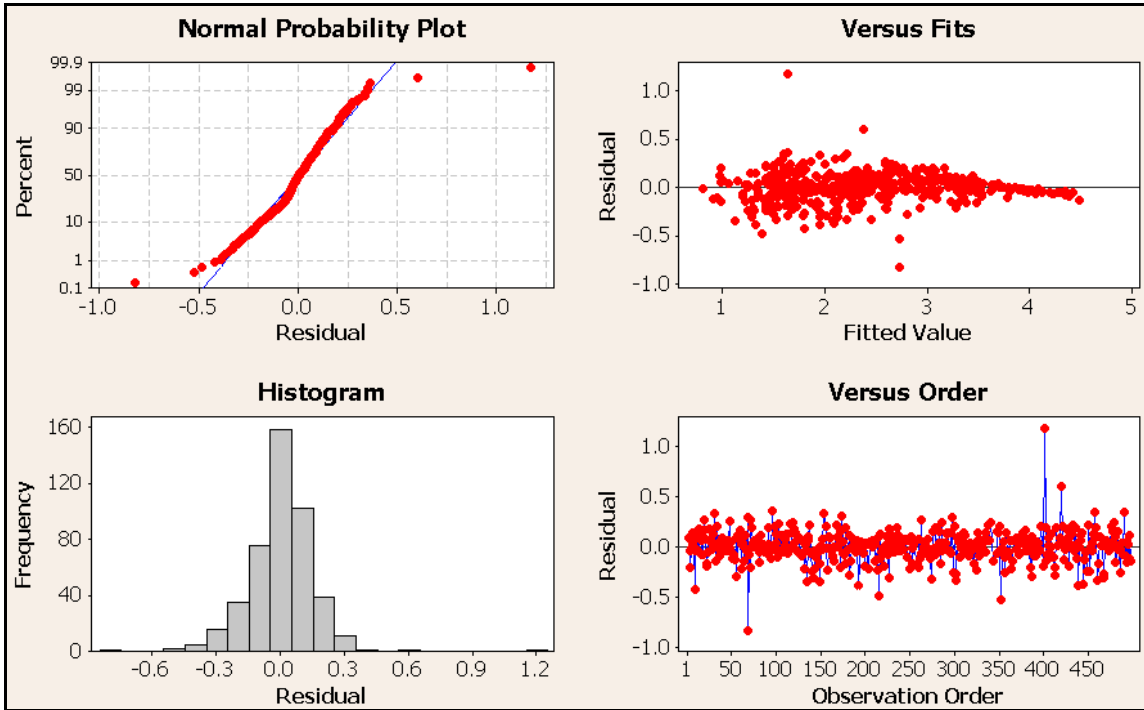
CHART A-2: Residual Plots for PSAT_Comp_Score
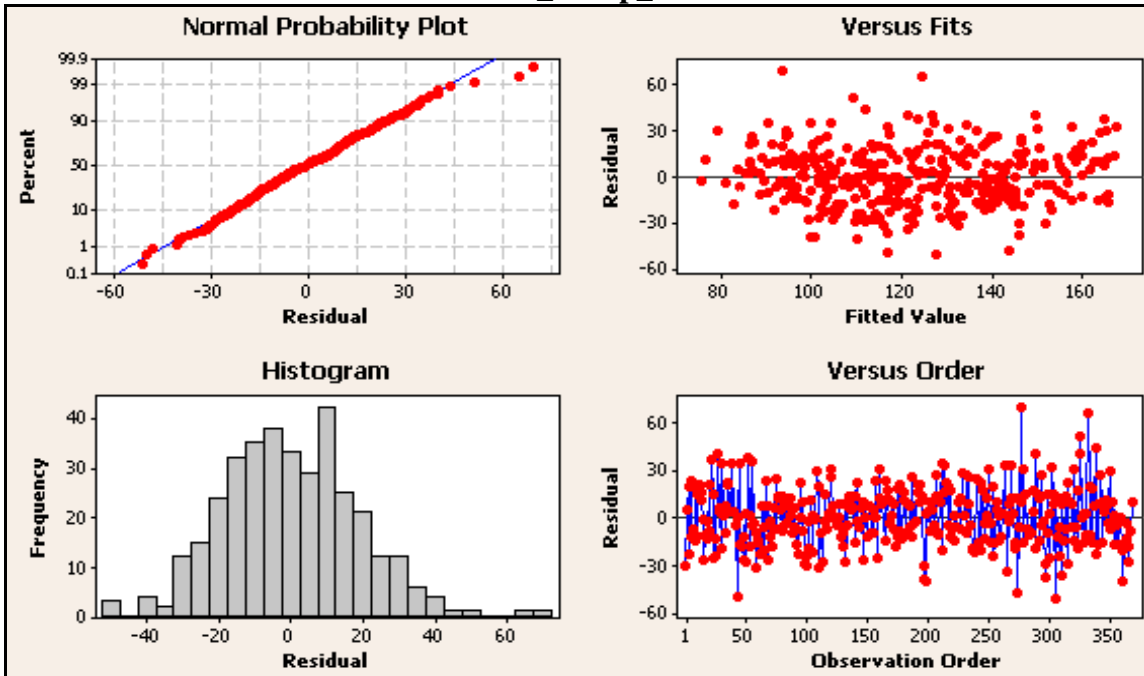
CHART A-3: Histogram of 1/x
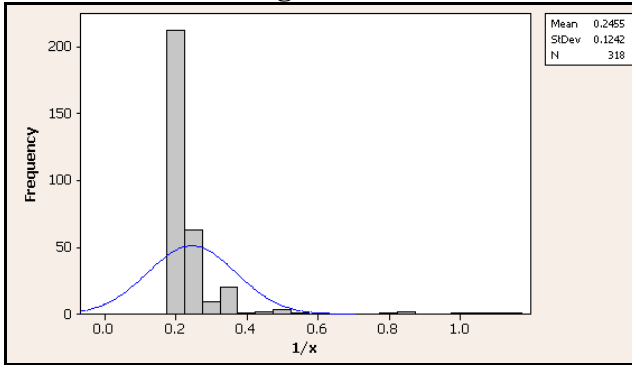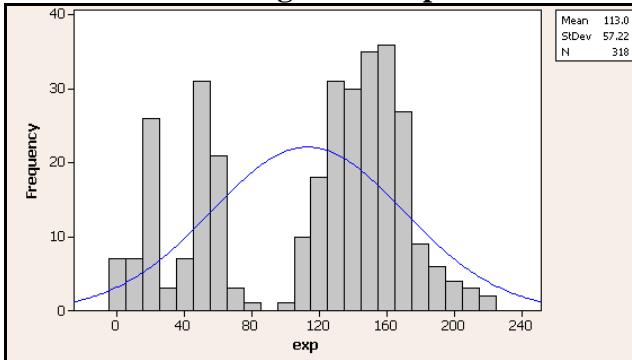

CHART A-4: Histogram of exp
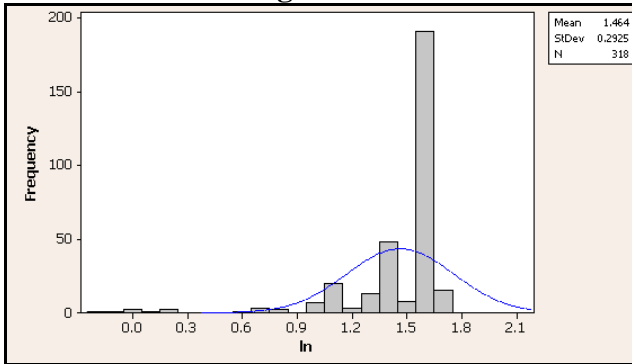

CHART A-5: Histogram of ln
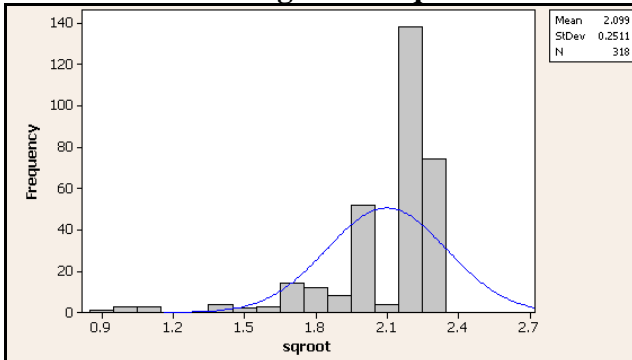

CHART A-6: Histogram of sqroot

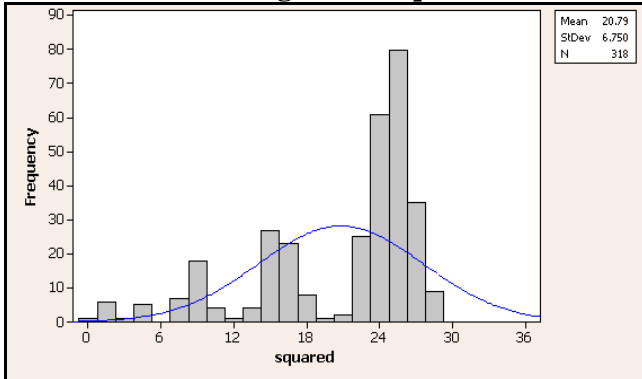## CHART A-7: Histogram of squared

CHART A-8: Histogram of arcsin(sqrt)
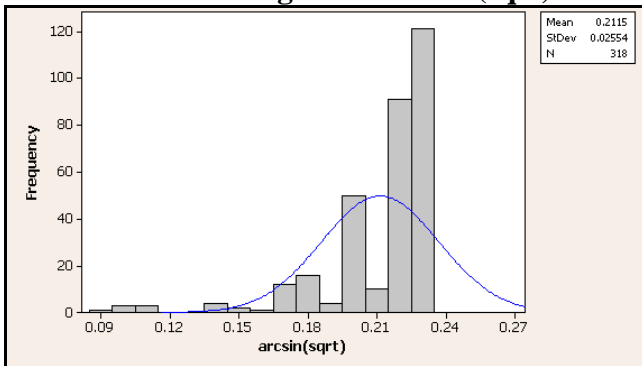

CHART A-9: Box-Cox Plot of Continuous Recoded
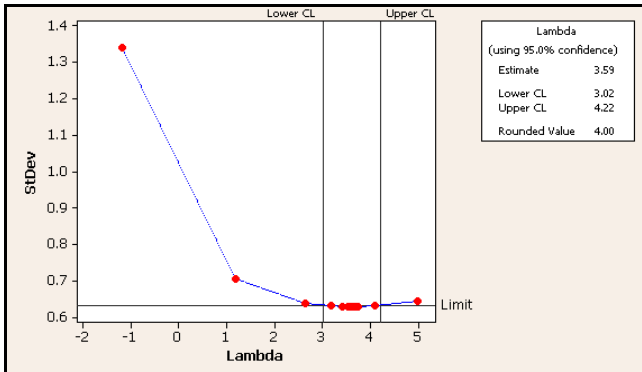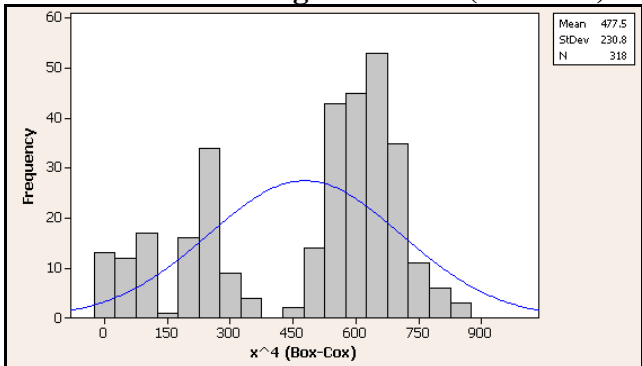

CHART A-10: Histogram of x^4 (Box-Cox)

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