THE ACADEMIC ACHIEVEMENT OF COLLEGE FRESHMEN
WITH REGARD TO DEMOGRAPHIC VARIABLES AND
COLLEGE ADMISSIONS TEST SCORES

DISSERTATION

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By

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The problem with which this study is concerned was that of examining the relationship between academic achievement of college freshmen students and selected demographic variables. The purpose was to compare the grade point average of selected freshmen at North Texas State University and determine if geographic location, high school size, gender, racial heritage and college admission test scores affect academic achievement during the first year of college.

Records of 1277 students who were enrolled full-time during the fall and spring semesters of 1985-86 were included in the study. The population was further limited to those students who were spring 1985 graduates from Texas public, accredited high schools.

The demographic variables of geographic location, UIL classification (high school size), and gender were not found to have significant effect on grade point average (GPA). The only variable which indicated significant difference was race. Results also showed
that there is a low, but positive correlation between college admission test scores and GPA.

The one-way analysis of variance technique and the $t$ test were used to test demographic variables, while the Pearson Product Moment Correlation was employed to determine correlation between test scores and GPA. Further information was obtained by using appropriate multiple range tests. Both the Scheffe and the less conservative Student-Newman-Kuels procedure revealed differences between subjects in the different race categories.

This study was conducted at a large regional university using a population that lent itself to uneven cell sizes in many of the demographic categories. Therefore, future studies might yield additional findings if a stratified sample with fewer non-fluid independent variables were utilized. A pilot study to glean population information preceding the implementation of another primary study might also prove helpful in the research process.
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CHAPTER I

INTRODUCTION

American folklore has for years reflected a certain passion for diversity, an inclination toward romanticism brought about by the obvious contrasts in the land and its people. Part of this appeal can be attributed to the immense size of the nation and the pride which resulted from conquering a vast, raw and untamed territory. Much of the American reputation was built on that scenario, characterized by changing landscapes, varying climates, an assortment of ethnic and cultural differences and unlimited opportunities.

Such a tremendous expanse of land, therefore, also created an unequal distribution of population, economic inequities and differing ideologies that even American brotherhood and shared vainglory have never been able to overcome, control or explain.

The major differences in the people, their lifestyles, social classes, expectations, and accomplishments can be related to the rural-urban variable which is so markedly noticeable in a nation which covers thousands of miles of unoccupied, unsettled terrain, yet boasts of many of the largest, most modern cities in the world. Other geographical and environmental differences and demographic contrasts such as gender, race and measured intelligence have long played
major roles in the American economy, politics, and even sociological thought and action. In recent years, however, these opposing elements have been receiving increased attention in the educational community as emphasis is placed on making quality education a national priority.

As reflected in numerous major studies such as A Nation at Risk, Horace's Compromise, To Reclaim a Legacy, and Involvement in Learning (National Educational Reports, 1984), educational excellence has taken on a new emphasis in the United States. Special interest groups have targeted educational standards and expectations. Furthermore, the general public, recognizing the necessity for improvement has spurred legislators in states all across the nation to enact laws to equalize funding and opportunities and modify traditionally accepted educational programs and procedures (Robey, 1984). As a result, sweeping changes in discipline, appraisal tactics, and graduation standards have taken place. Such legislation has also renewed interest in determining factors which affect learning and influence academic success. In studying these determinants, discussion has often centered on the educational settings found in the United States, the financial and social environments and the opportunities, or lack of, available to students attending schools in a nation characterized by many races of people living in sparsely settled rural areas, in heavily populated metropolitan locales, in wealthy, upwardly mobile suburban communities as
well as hundreds of points in between (Bell, 1984).

This study attempted to determine if there is any significant difference in the academic achievement of college freshmen at North Texas State University with regard to selected demographic variables and college admission test scores.

Statement of the Problem

The problem of the study was to examine the relationship between academic achievement of freshmen students and selected variables.

Purpose of the Study

The purpose of this study was to compare the grade point average (GPA) of selected freshmen at North Texas State University and to determine if geographic location, size of high school, gender, racial heritage and college admission test scores affect academic achievement during the first year of college.

Hypotheses

To carry out the purposes of the study, the following hypotheses were tested:

1. There will be no significant difference in the GPA obtained by students when classified by geographic location.

2. There will be no significant difference in the GPA obtained by students when classified by high school UIL
3. There will be no significant difference in GPA obtained by students when classified by gender.

4. There will be no significant difference in GPA obtained by students when classified by race.

5. There will be a significant positive correlation between college admission tests and first year college performance (GPA).

Background of the Study

A comprehensive review of the literature reveals a lack of recent research that examines the influence of geographical location and particularly rural-urban differences in scholastic performance. The review also showed an insignificant amount of literature dealing with other variables affecting freshmen academic success. Likewise, there were no studies found that related to the subject in Texas or other surrounding states. Thus, this study has significant potential to contribute to a body of knowledge concerning demographic influences on academic success of college freshmen in Texas in the 1980s.

A paper by Barbara Feller, entitled Rural-Urban Differences in Scholastic Performance in College, examines the affects of rural-urban background and social class on scholastic performance in college and the differences when controlled for social class, sex, and
measured intelligence. These data were originally collected for research at Stanford University from 1958 to 1965 and the University of Oregon from 1961 to 1967. Feller concluded that there is no major systematic impact of rural experience on scholastic attainment in college. She points out that while neither rural-urban nor social class background is more important, it is the combination of such variables as rural-urban background, social class, and gender that has predictive potential. Her findings also showed urban non-middle class females were the highest achievers (Feller, 1974).

In a publication from England entitled The Urban or Rural Background of First-Year University Students in Relation to Their Academic Performance, Dale and Miller assessed the urban-rural variable by a matched pairs procedure. They discussed earlier studies in Ireland and Australia which supported their findings that students from metropolitan areas or large cities over 100,000 population performed slightly better than those from smaller settings. The authors indicated that their findings showed that city students had the best university academic performance while those from schools in towns of 16,000 to 60,000 had the poorest results. Students from smaller towns and villages fell between, producing a curvilinear relationship between performance and the urban-rural dichotomy. Dale and Miller emphasized that their study focused not merely on differences
in standard between students from urban and rural areas, but on differences in performance among students from those two areas who are equal in academic attainment on entry and are matched on other variables (1972).

In a study, Alaska Native Students and College Success, researchers at the University of Alaska maintain that academic skills acquired in high school are consistently related to college success (Kleinfeld, 1979). Therefore, they raised some serious questions about long-term consequences of the decreased attention to college preparation that high schools are giving to college preparation for native rural students.

In a case analysis of academic achievement of University of Wisconsin freshmen from rural high schools, Witte (1967) studied thirty students intensively to determine what non-intellectual variables affected their first semester level of academic performance. Using a one-way analysis of variance and the F-ratio, he drew several conclusions. The number of years of mother's education, the self-concept of ability of the female students, and the self-expectations for the male students proved to be significantly related to the level of academic achievement. Witte also found that non-intellectual factors have differing effects for boys and girls and that no single non-intellectual factor can be said to operate in a similar manner for all students.

According to Russo and Checketts (1978) in a study using
sets of ordered variables and their association with test scores, the school was found quite often to be the first agent singled out as responsible for student achievement. The two school-related factors, class size and school size, tested in their study seemed, however, to have little influence on achievement test scores.

A study involving 120 college freshmen in the lowest 20 per cent of their classes showed that high school graduating class size did not provide any significant predictor for further achievement (Warming, 1976). In an examination of grade point averages, retention and developmental characteristics of college freshmen, much attention was given by Allbritten (1983) to the constructs of persistence and academic achievement. The researchers found no significant net relationship between persistence and the variables of parental income, race, gender, age, and marital status and academic achievement (Allbritten, 1983).

In studying the secondary variables that affect academic performance, the research provided related data, but very little information specific to the topic of this current study. Most of the literature addresses the impact of measured intelligence and the effectiveness of tests in predicting freshmen success. Some findings do point to differences in performance due to sex and race of students.

In a study by Dalton (1976) using multiple correlations
and samplings from Indiana University freshmen, he found that in regard to academic achievement females were more predictable than males and that the ability to predict college grades from the SAT is decreasing. His investigation replicated an earlier study that had shown similar conclusions.

A longitudinal comparison of college student performance with the results of their early elementary achievement test performance yielded support for the contention that proficiency in elementary school and high school, no matter what the size, has a significant relationship to college academic success. The results indicated that the relationship was generally higher for females than males (Loyd et al., 1980).

Cherdack (1971) conducted a study to determine the degree to which SAT scores and high school grades were effective in predicting the freshmen grades of disadvantaged/ minority students, to examine the validity of the same predictor of gender and ethnic background, and to see if the use of the common white regression equation for minority students accurately predicted their performance. The results showed that the high school average was the best overall predictor for both minority and white freshmen. The verbal portion of the SAT was a more consistent predictor for white than minority students. SAT verbal correlations for both white and minority females were generally higher than those
Significance of the Study

The study focused on the academic success of college freshmen students in regard to the size of the high school where they were graduated, to the geographic location of the state where their secondary learning experiences were obtained, to their racial origin and gender and to their scores on the Scholastic Aptitude Test and/or the American College Test which are used to measure achievement and/or aptitude. In a time when the effectiveness of inner-city schools is questioned and consolidation of small school districts is frequently considered, this study could provide some valuable documentation, resource material, and cross referencing for the examination of similar variables.

The study was significant in that it

1. Determined whether a relationship exists between college admission test scores and achievement during the freshmen year at college,

2. Provided information about academic success in reference to gender and racial heritage,

3. Determined whether a significant relationship exists between geographic locations defined as urban and non-urban and student achievement, and

4. Determined whether a relationship exists between high school size and academic success of college freshmen.
Limitations

Several factors influenced the analysis when obtaining information about freshmen students. Information about the types of classes in which students were enrolled for their freshman year was not utilized; so no distinction was made for what could be considered more stringent course loads, more difficult or comprehensive classes or remedial offerings. Since college admissions test scores do not indicate artistic, creative, or musical abilities, the academic success of some students may far exceed SAT and ACT scores. The data are from university records, some of which were generated by the university system while others were self-reported at the time of registration. Thus the variables generated from the self-reported data are subject to standard criticism of qualitative data. Some subjects were deleted from the study based on incomplete data available.

Delimitations

Generalization of this study was restricted by the population which was studied. Only freshmen students at North Texas State University who were enrolled in at least 12 credit hours per semester were included. Subjects were chosen from only the fall and spring semester terms of 1985-86. Only findings from Texas residents who graduated from Texas public high schools were reported.
Since the data collected in this study are limited to one particular university, they may have a higher degree of relevance to other regional institutions of higher education and a lower degree of relevance to universities dissimilar to North Texas State University. The fact that the study will be drawn from the sixth largest university in Texas suggests that the conclusions of this research might have some relevance to other universities.

**Definition of Terms**

**Metropolitan Statistical Areas (MSA).**—As defined for the 1980 census, a MSA comprises a large population nucleus, together with adjacent communities which have a high degree of economic and social integration with that nucleus. For this study, the nucleus city such as Dallas will be considered inside central city. These cities will be referred to as Category A.

**Outside Central Cities (OCC).**—This term will refer to all cities with more than 2,500 inhabitants that have a high degree of economic and social integration with a MSA nucleus and are included in the metropolitan county listing. Such cities will be referred to as Category B in the study.

**Urbanized/Nonmetropolitan (U/NM).**—This term will refer to any city over 2,500 not considered MSA, Outside Central City, or Rural and will be referred to as Category C in the study.
Rural Areas (RA).—This term refers to any area not classified as MSA, Outside Central Cities, or Urbanized/Nonmetropolitan with population less than 2,500 inhabitants and will be referred to as Category D in the study (United States Department of Commerce, 1980).

Class 1A through 5A.—These University Interscholastic League (UIL) ratings are given to all high schools in Texas according to specified size requirement. School classification is a function of average daily attendance as defined by the Texas Education Agency on a biennial basis. Rankings range from 1A to 5A with 5A signifying the largest schools in the state and 1A being the smallest (Constitution and Contest Rules, 1984).

Full-time Freshmen Students.—This term applies to any freshman student who completes at least 12 hours each semester at North Texas State University for a total of 24 in both semesters (North Texas State University Bulletin, 1986).

Measured intelligence.—This term refers to the scores of students on the college admission tests (SAT or ACT) taken to measure verbal and quantitative abilities.

Academic Success.—This term refers to a student who has maintained at least a 1.6 GPA and is, therefore, not on scholastic probation or suspension.
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CHAPTER II

REVIEW OF RELATED LITERATURE

For years researchers have sought to identify factors important to student achievement. In most cases this involved measuring specific resources both in and out of schools and correlating them with test scores or variables. Numerous, and often interactory, factors account for academic success. Others at least provide the potential for a climate conducive to learning. A growing list of determinants has been assessed as researchers look for reasons why some students achieve and others do not. Emphasis has often been centered on such school input variables as school resources, time spent learning, personnel, facilities, instructional opportunities, and size of the school, as well as community or geographical environment, gender, race, and measured intelligence. The difficulty of studying the impact of these variables is complicated by diversity among American student plus the manner in which factors overlap in their affect on each other. Furthermore, researchers have in recent years not only attempted to determine those variables which affect student success, but also have tried to qualify and define effective schools using the same measures. Since so many variables lie outside the scope of the school environment results are usually inconclusive or contradictory, likewise, within the context of time, studies are reflecting different
perspectives as a result of rapidly occurring changes in society. To focus more narrowly on a topic which obviously has diverse composition, several specific areas were selected for support of this study. These are divided into four sections: school inputs and their affect on achievement, urban and rural influences on academic success, impact of gender and social class on student achievement, and studies relating to college admissions tests, specifically the Scholastic Aptitude Test (SAT) and the American College Test (ACT).

School Inputs and Their Affect on Achievement

One of the best known studies concerning student achievement was conducted by Coleman under the auspices of the National Center for Education Statistics of the U.S. Office of Education. Coleman's first study in 1966, Equality of Educational Opportunity, indicated that there is little relationship between school input and student achievement. Input has been defined as the amount of money, material or effort put into a project or process (Guralnik, 1976). Among all the factors measured, Coleman and his colleagues found those with the largest affects on achievement had to do with students' family backgrounds. These factors included parental educational levels and socioeconomic status, family size, and the amount of interest that parents took in their children's education. According to Coleman, the family
backgrounds of other students in the school showed a stronger
influence on student achievement than school input. Children
tended to perform better from educationally oriented home
backgrounds (1966).

More recent research by Coleman indicates a different
state of affairs. He referred to Greeley's (1982) findings
which indicate that the academic demands placed on students
by their schools strongly influence students' achievement
levels. In a recent study of international comparisons of
cognitive achievement, Coleman used data compiled by the
International Association for the Evaluation of Educational
Achievement. The results revealed that major variations in
school systems can significantly affect students'
achievement. He pointed out that to find these major
variations one must look at relative changes in the areas of
achievement and the intensity with which a subject is taught.
Although Coleman did provide extensive research, much of his
findings have come under attack due to the excessive use of
analysis of covariance and the built-in weaknesses of that
procedure. Also Coleman has been criticized for failing to
recognize a phenomenon known as "proxy" variables whereby the
researcher mislabels a variable (Bridge et al., 1979).

If the system can make a difference in the way in which
students achieve, it seems apparent that individual schools
can have similar effects. Indeed, some studies revealed that
even the classroom to which a child is assigned can make a
difference in that child's level of achievement. Researchers note that students with similar backgrounds and similar reading achievement varied according to differences in school and classroom experiences. By controlling the initial achievement of the students and their background, researchers discovered that reading growth was significantly related to both the school a child attended and the room to which he was assigned. Murnane (1975) found the same type of results in his study of the impact of school resources on achievement of black inner city children. Both Murnane's study as well as others by Armor (1976) provided evidence that certain schools and even specific classrooms promote higher achievement than others.

On effective schools Bickel states that schools have little influence on a child's achievement that is independent of his background and general social context (1983). He adds that for poor and disadvantaged students, the schools basically have no power to compensate for the negative influence of economic and social inequality on achievement.

There appears to be no consensus of opinion on the relationship between school achievement and resources and facilities. One study by Levine and Stark (1984) showed that some inner city schools raised academic achievement by instituting measures to make instructional resources more easily available. Clark, Lotto, and McCarthy (1980) agreed that extra funding can often promote success, but the results
also depend on the manner in which the money is used. Often there are hidden costs or extra expenses such as transportation which do not directly affect achievement but are necessary to provide educational experiences.

Few studies have shown district size or school size to relate directly to student performance. Bridge et al., (1979) claim that student enrollment is assumed to affect achievement indirectly. The researchers stated that although school size is not an asset or handicap, larger schools are usually better able to offer more course choices and special programs. Furthermore, Fronstad summarized his research by writing that in order for schools to be effective they should have elementary enrollment of at least 300 and high school enrollments of at least 500 (1973).

Urban and Rural Influences on Academic Success

According to Sher (1983), there is little achievement data on rural students, and few studies to provide statistically sound conclusions on the performance of rural schools. He did conclude that peripheral evidence indicated that students in rural schools do as well as or even slightly better than urban students on basic literacy and mathematics tests. The National Assessment of Education Progress in the United States found, however, that the only group scoring lower average than children in relatively poor agricultural communities were children in impoverished urban areas. Sher,
therefore, drew the conclusion that such data confirm that socioeconomic factors such as parents' income and education are powerful determinants of student achievement everywhere. He also states that neither the specialization typical of big urban schools nor the coziness of small rural schools made an impact on pupil performance comparable to other more profound influences in students' lives. Furthermore, the urban and rural variable alone does not adequately explain fluctuations in student achievement (1983).

To justify some of the basis for his conclusions, Sher described what he believed to be the characteristics of rural schools. Across the industrialized nations, rural schools are distinguishable from city schools in a number of important ways. Rural schools tend to be less specialized, less well-equipped, and less bureaucratic than their urban counterparts. Rural schools tend to be more oriented toward teaching the 'basics', more reliant on the particular qualities of individual teachers and more familiar and relaxed in operating style than is true of comparable schools in metropolitan regions.

Generalization about rural schools, Sher pointed out, must be approached with the same caution that accompanies generalizations about rural communities. Since diversity is the norm, rural schools encompass everything from a single outpost with one untrained teacher to a wealthy regional school with well-trained teachers for every classroom. Rural
schools are often located in growing boom towns as well as in
dying communities. Although the author warned about treating
rural schools as if they were all the same, he stated that
rural primary schools in developed nations share some
fundamental characteristics. One of these is that rural
primary schools everywhere are significantly smaller than
primary schools in the cities (1983).

Despite the national distress about the quality of
public schooling, a survey of teachers, administrators and
school board members in America's smallest rural districts
indicated an extraordinary level of satisfaction with these
small schools. About 75 per cent of the respondents
expressed contentment with factors ranging from student
achievement to drug and alcohol control to teacher quality.
Dunne commented that this high degree of satisfaction would
be difficult to find in cities or suburbs (1982).

Feller (1974) provided a thorough study of the urban-
rural variable as she attempts to untangle the effects of
urban-rural background and social class on scholastic
performance in college. Her research further provided an
experiment to determine whether these differences persist
even when analysis of covariance was used and controls for
social class, gender and measured intelligence had been
introduced. In general she found that the urban-rural
differences in scholastic performance in high school and
college are very slight for the sample of 729 students
selected from both backgrounds. Her bivariate analysis revealed that rural students have a slightly higher level of high school performance than do urban students. With regard to measured intelligence, the rural students tend to score higher on the verbal aptitude test but lower on the quantitative one. In college the urban students attained higher mean first-year and cumulative grade point averages than their rural counterparts. She also found in her sample that rural students are more likely than urban ones to experience academic failure than urban students but less likely to drop college.

Impact of Gender and Social Class on Student Achievement

Although the rural-urban differences found in academic success were slight, the combination of traits such as background, social class and gender yielded some distinctive achievement types. Using the results of a breakdown of means of each dependent variable with urban-rural background, controlling simultaneously for sex and social class thus yielding twelve sex-class-urban-rural types, Feller ranked each according to its relative performance in certain measures of academic performance. A ranking for college potential and college performance was also computed for the twelve types. From her sample, Feller found rural upper class females possess the highest potential for college achievement; rural lower class female and urban lower class
females are the second and third highest in college potential. The rural middle male showed the least college potential for all types. Her findings showed that those males did, indeed, perform at the lowest level. Rural upper class females tied for the highest level of college performance. The rural lower class females, who ranked second highest in college potential, fell to ninth place which proved to be a notable incongruent case. In general the top third of the twelve types of achievers consisted mostly of urban, non-middle class, female students, and the lower third was composed of rural, middle class males. Although Feller did not address the issue, her findings indicated that gender may be a better predictor of success than geographical environment (1974).

Studies Relating to College Admissions Tests

A review of the literature indicates that there is more information and research available concerning admissions tests and their relationship to student academic achievement than can be found for most other variables. There is, however, very little consensus on the validity of such tests and the role they should play in providing information about students' potential for success. Therefore, the literature reflects many varied opinions and research to support a myriad of theories.

Most colleges and universities across the country
continue to include standardized entrance examinations in their admissions requirements. Furthermore, whether they agree with the concept of admissions tests, most researchers agree that these tests, along with other variables, assist in predicting some measure of achievement the first year of college (Anrig, 1985). The biggest problem lies in trying to separate the results of these tests from such variables as previous experience and learning opportunities. That difficulty is accentuated as the population of colleges and universities become larger and more diversified.

The two most widely used college admissions tests are the Scholastic Aptitude Test (SAT) and the American College Test (ACT). The SAT was developed in 1926 to deal with discrepancies in the quality of preparation of high school students. SAT appeared as a result of efforts to design a test which would measure aptitude and predict the likelihood of success in college. For almost 40 years, the test was accepted without much question until the educational reforms of the 1960s. According to O'Keefe (1984), the SAT was devised with the hope that it would measure some "underlying set of intellectual characteristics which are relatively constant and which are not seriously affected by the quality of the individual's previous education." O'Keefe stated that this did not take place because the SAT actually measures achievement. He added that not only is the SAT an achievement test, it is one that aims at testing achievement
attained through experience and long-term study. Drawing from other studies the author stated that high school grades are the best predictor of future performance with admissions tests contributing a small, but sometimes important degree of certainty. According to O'Keefe, the accuracy of the prediction of student achievement is increased to about one student in three when the SAT is included along with high school grades (1984).

Since the 1960s and 1970s, the SAT has come under close scrutiny especially with the rise in the number of women and racial minorities attending colleges and universities. Questions have been raised about the potential for race, sex and class bias with the exams. Steelman and Powell (1985) posit that this attitude is changing with the quality-conscious climate of the 1980s.

Anrig (1985) states that this same progress toward educational equity is bringing positive results in the performance of black students. Black students' test scores are improving. Between 1976 and 1984 the mean scores of black students on the SAT rose 10 points on the verbal section and 19 points on the mathematical section. The gap between test scores of black students and white students is closing dramatically. In the same eight year period, mean score differences on the SAT between black students and all other students were reduced by 13 per cent on the verbal and 18 per cent on the mathematical portion of the test. The
best gains in the black students' test scores are occurring in the Southeast, although SAT scores of blacks have improved in every region of the United States.

Taylor (1980) explains that generally aptitude tests have been standardized on predominantly white populations, and therefore "depend heavily upon linguistic styles which differ considerably between black and white populations in the United States, even with a control for socioeconomic status." Stodolsky and Lesser (1967) do not consider that difference detrimental, but rather a benefit. In a study of American students representing different ethnic groups they found diverse patterns of mental ability which they identified as one manifestation of the pluralism of America. For example, they noted that Chinese-American students scored extremely well on tests of spatial conceptualization while Jewish students scored high on tests of verbal ability. They stated that educators should recognize "particular patterns of intellectual strengths and weaknesses of various ethnic groups and maximize the potential power of these patterns by matching instructional conditions to them." The research did not address the age of the subjects or their command of the language which could have significant impact on research findings.

A 1985 report from the Educational Testing Service (ETS) stated that decreasing emphasis on academics is largely to blame for declining achievement test scores among high
school seniors. According to ETS, that changing emphasis is especially true among white and more affluent students. The ETS reported that fewer high school seniors in 1980 were enrolled in academic programs than in 1972. The 1980 seniors also took fewer semesters of science and foreign languages and spent less time on homework based on data from two longitudinal studies by the National Center for Education Statistics (1985).

Scores declined between 1972 and 1980 on vocabulary, reading and math achievement tests. On all three tests, scores of white students declined more than scores of other racial or ethnic groups. Vocabulary scores dropped more for female than for males, while the decline in mathematics scores was slightly larger for males than for females (Cole, 1985). There is ample evidence that the SAT has often been used for purposes other than those intended by the publishers.

One of the most recent problems with standardized achievement tests is the tendency for researchers to use them to recognize effective schools. Also, secondary schools are often judged by the number of successful students they have attending certain colleges. Unfortunately, the validity of these rankings are often based on poor statistics and comparisons that do not reflect proper percentages. Too often comparisons are erroneously made for high achieving or low achieving schools by using test scores of their students
(Serow and Jackson, 1983). Howe (1985) pointed out that the SAT is not a good instrument for measuring school quality or school effects. He emphasized that even the College Board and the Educational Testing Service regularly announce that the SAT is too often misused for this purpose. He asserted that the SAT is designed solely to predict the performance of students during the first year of college and is useful when combined with other information about students.

Because standardized tests have come under such close examination, the producers of the SAT have made diligent efforts to ensure that the tests are valid and useful. For example, all questions used on the annual SAT exams are carefully field tested before general use. Results are then carefully analyzed for question errors. According to William Harris, Area Director for the College Board Admissions and Guidance Program of ETS, the validity of SAT has remained constant. A recent survey also found the test to be as predictive of academic performance in college as it was in the past. Harris stated that the SAT is not designed nor intended to measure school performance. He added that the SAT is set up to measure long-term developed verbal and mathematics reasoning abilities, attributes that are related to college performance (1976).

Turnbull (1978) claimed that teachers support the outside test approach because such tests deliver accuracy, objectivity and comparability. Supporters of testing
programs claim that at least the standardized tests offer the only arena where prospective college entrants compete on exactly the same ground. According to a report by Nairn (1981), Ralph Nader and others have criticized the test, charging that it is actually responsible for preserving the status quo by denying students from economically deprived backgrounds a chance for higher education. Ebel (1976) states that cultural minorities, including minority racial groups, tend to make lower scores on the standardized test, although that fact does not signify bias. The Education Testing Service also admitted that average scores are higher for students from families with higher incomes, but contends that students from every income level received results in all ranges of scores. Still, the ETS defends the test against assertions that it is flawed, stating rather that an individual does not have the precise achievement that particular test measures. McNamara (1981) reported that Irv Brondy, an ETS administrator, defended the SAT from charges that it is sexually biased. Although females often score not as well on the math section of the test as do males, he claims it is not an intrinsic fault of the test. He continued that males are generally better trained mathematically because sexual stereotyping results in women often not being encouraged to take math courses in school.

In defending the test against charges of minority bias, ETS officials stressed that the test can only reflect conditions
which actually exist.

The American College Test (ACT), the second most utilized admissions examination in the United States, has never drawn as much attention from researchers as has the SAT. This can be attributed in part to the fact that it was not developed until 1959 and also because its use is not as widespread (1979). Although the intent of the ACT is the same as SAT the focus is slightly different since the ACT is divided into four separate subtests instead of two. In addition to English, mathematics, natural science and social studies results, ACT test takers are provided overall composite scores.

In a study of ordered variables and their association to the ACT scores, Russo and Cheketts (1978) discuss the decline in college entrance examination test scores and the sources of that decline. Their study further addressed the validity of the test in reference to the way in which variables are placed in "context" or sets so as to improve both prediction and explanation of variables associated with college entrance examination scores. In their attempt to determine sources of decline in ACT predictability they studied (a) school-related factors, (b) student-related factors, and (c) family structure-related factors. They found that academic courses taken had the greatest predictive value while the level of educational aspiration of the student was second. The size of the school was negatively
associated with composite ACT scores. School related influence seemed to have little influence on the basis of its relationship to the potential achievement measure employed. The results of the study did not support the claim that family structure factors such as birth order, age-spanning of siblings, or family size have any particular influence on achievement test scores (1978).

The relative predictive capability of the ACT composite score and high school GPA was studied for 540 black freshmen enrolled at Jackson State College in the fall of 1965. No significant correlation was obtained between high school grade point average (HSGPA) and first-term college GPA. A comparison of ACT and HSGPA was also made by compiling the mean first-term GPA's for groups identified by four ACT groupings such as ACT score range, ACT mean, HSGPA mean and college GPA. The HSGPA did not conform to the pattern of abilities indicated by either the ACT means or the college GPA means. The 87 students scoring in the lowest ACT score groups and having the lowest college GPA did not have the lowest observed HSGPA mean. Funches (1967) concluded from his study that HSGPA is not acceptable as a predictor of college performance at Jackson State College. He further concluded that the ACT composite score is a more reliable predictor of first term success at that particular college.


Fonstad, C. (1973). What research says about schools and school districts ... factors related to effectiveness. Madison: Division for Field Services, Wisconsin Department of Public Instruction.


CHAPTER III

Procedures

This study attempted to determine to what extent demographic variables such as geographic location, high school size, gender, racial heritage and college admission test scores influence achievement during the first year of college. This chapter outlines the study.

Population

Records of freshmen students from the 1985-86 fall and spring semesters at North Texas State University were selected for use in this study. Only full-time students who enrolled directly from Texas high schools were included.

Selection of Data Producing Group

The data producing population for all students in 1985-86 who met criteria for the study were generated from university student files. The criteria included the following: spring 1985 graduates from public high school accredited by Texas Education Agency, enrolled as a full-time students as defined for the study.

Instruments

The instruments used in this study were the Scholastic Aptitude Test (SAT) and the American College Test (ACT).

The SAT is intended to measure developed verbal and
math reasoning abilities related to successful performance in college, but does not measure innate characteristics (Robey, 1984). Its purpose is to supplement the secondary school record and other information about the student in assessing readiness for college-level work.

The SAT is developed and administered by the Educational Testing Service for the Admissions Testing Program of the College Board. It is the most widely used examination for assessing college readiness in the United States. A score of 800 for each section is considered the upper limit. A score of 200 is the lowest reported result. The SAT is a direct descendant of the Army Alpha, but throughout the years resemblance to its prototype has lessened. The SAT does have a number of the features of the earlier Army Alpha prototype, such as (1) the attempt to measure aptitude for college studies rather than intelligence, (2) the equating of numerous forms so that the predictive scores are stable irrespective of the time and place the student takes the test, (3) the extensive and systematic use of item analysis, and (4) a field test of all new material before any individual item is used operationally. Currently the two subscores are referred to as SAT-V and SAT-M. Items with known statistical characteristics are organized into sections requiring 30 or 45 minutes each for a total testing time of three hours.

Within each block of items, arrangement is in terms of
increasing difficulty, with the mean difficulty of each block equal to that of the test as a whole. All items are of the five-option multiple choice variety and are formula scored.

Test content is selected to avoid, if at all possible, any inequities to a subset of the intended population. Although the SAT-M requires as background only the mathematics taught in grades one through nine, the SAT-V is related to social, political, scientific, artistic, philosophical and literary areas. SAT scores are reported with mean 500 and standard deviation 100. The internal consistency reliability estimates for 12 forms cluster closely around .91 and .90 for the verbal and mathematics scores, respectively. The parallel-form reliabilities average two points lower (Buros, 1972).

From its inception the SAT has been found to have reasonably good validity for predicting college achievement. Research has also shown that the SAT increases the predictive validity of the high school average or rank. Typical validities are .34 for SAT-V, .33 for SAT-M, and .55 for the high school record, with a multiple correlation of the order of .62. These validities are as high as have been attained with any general testing instrument in comparable settings. Extensive research has focused on the relative validities of the SAT for male versus female students and black versus white students. In neither of these sets of comparisons have any important differences been found (Buros, 1972).
The ACT, which is the second most widely used admissions test, comprises four tests of educational development and scholastic ability plus a questionnaire about vocational and educational plans, family background, high school grades, extracurricular activities and similar interests. The four tests are in English usage, mathematics usage, social studies reading, and natural sciences reading. These subsections are direct descendants of the Iowa Tests of Educational Development (ITED).

The English usage test contains 75 items with a 40-minute time limit. The test consists of four fairly lengthy reading passages in which words or phrases are underlined and alternatives of 'no change' or different expressions are offered for the underlined sections.

The mathematics usage test consists of 40 items in arithmetic, algebra, and plane geometry with a 50-minute time limit. The emphasis in geometry varies among different forms of the test. Very little "modern" mathematics is included since the focus is on the variety of problems.

The social studies reading test contains 52 items and a time limit of 35 minutes. Thirty-seven of the items are based on four reading passages, and the remaining 15 deal with miscellaneous questions from the social studies area.

The natural science reading section is set up exactly like the social studies reading test with 52 items, and a 35 minute time frame. Questions are also divided 37 reading
passages and 15 general. The content includes both physical science and natural science even though the section is simply referred to as natural science.

All of the items are of the multiple choice type. The mathematics section provides five options while the others have only four. By experimenting on Iowa high school students, draft items for new forms of the ACT are tested. Item analysis is performed with the ITED as the criterion measure. Final forms are equated by the equipercentile method to old forms, using mainly students at regular ACT centers in Iowa (1972).

The scale score system used for the ACT is the same as that for the ITED with the range from 1 to 36 with the standard deviation intentionally set at approximately 5. This allows the probable error of measurement to fall at about one scale score unit if the reliability coefficient were .91. Since the reliabilities for the ACT tend to be lower, this error of measurement is not always accurate. The mean scale score for college bound seniors is about 20.

Reliabilities of successive forms of the ACT are estimated by the odd-even procedure. Evidence indicates that ACT reliabilities may be low for individual decisions and that procedures and methods used for estimating reliability are inadequate (Buros, 1972). On the other hand, validation of the ACT has met with consistently good results. The predictive effectiveness of ACT scores is analyzed by course
or subject-matter groupings for individual schools (such as education and engineering) as separate validity studies are performed for each college. Although this results in a wide range of validity coefficients, the central tendency of the distribution of correlations between ACT composite scores and overall GPA is about .50. The testing company also incorporates high school grades with test scores to improve the accuracy of prediction for college success. Furthermore, research shows ample evidence that the ACT has good predictive validity.

Procedures for Collecting Data

Data were taken from the North Texas State University administrative files. Files were abstracted and then all of the UIL and geographical information added manually. Information for each of the subjects included a reference identification number, second semester cumulative GPA, college admissions test score, an indication that the student was full time, high school code for UIL classification, and high school code for geographic location, gender, and race.

Design of the Study

ACT and SAT, while equivalent in the construct they measure, are not equivalent in reported form. As a result, a university formula for equivalency was used for hypothesis testing. Since the original variables were reported in continuous form, equivalency scores were also reported as
continuous variables.

For each test of an hypothesis, the continuous variable of GPA was the dependent variable. Numbers of semester hours attempted and completed were reported as continuous variables. For the purpose of displaying information in a summarized format, GPA was twice recoded as a categorical variable. GPA was recoded as a four-level categorical variable representing four letter grades and also recoded as a two-level categorical variable representing grade point averages above and below 1.6. Both high school codes (UIL classification and geographical location) were reported as categorical variables. UIL classification contained the following levels.

1 - 1A - high school population 134 and less
2 - 2A - high school population 135-274
3 - 3A - high school population 275-649
4 - 4A - high school population 650-1304
5 - 5A - high school population 1305 and over

The four levels for the categorical variable geographic location were as follows.

1 - Metropolitan Statistical Areas - inside central cities
2 - Outside Central Cities - suburban type areas
3 - Urbanized/Nonmetropolitan - urbanized with 2500 inhabitants or more, not adjacent to metropolitan areas
4 - Rural Areas - less than 2500 inhabitants
The categorical variable race was reported in one of five levels.
1 - Caucasian
2 - Afro-American
3 - Oriental-American
4 - American Indian
5 - Mexican-American

The categorical variable gender was reported in two levels.
1 - Male
2 - Female

The Statistics Package for the Social Sciences (SPSS - Release 2.1) was utilized for computation of statistical tests. Hypotheses were tested for significant differences between and among means through one way analysis of variance, t test, and Pearson product moment correlation.

Hypothesis 1 was tested in the null with a one-way analysis of variance. This procedure compares GPA means and indicates variation. The SPSS procedure ONEWAY allows the opportunity to exercise other statistical options to report probability values and isolate the source of any significant variation.

Hypothesis 2 was tested in the null with a one-way analysis of variance. This procedure compares GPA means and indicates variation. The SPSS procedure ONEWAY allows the opportunity to exercise other statistical options to report probability values and isolate the source of any significant
variation.

Hypothesis 3 was tested in the null with the t test for two independent samples. The hypothesis was that the significance will be greater than .05.

Hypothesis 4 was tested in the null with a one-way analysis of variance. This procedure compares GPA means and indicates variation. The SPSS procedure ONEWAY allows the opportunity to exercise other statistical options to report probability values and isolate the source of any significant variation.

Hypothesis 5 was stated in the directional form and was tested by computing Pearson Product moment correlations between the variable of GPA and admissions test score. Although stated in the directional form, the correlation was tested for two-tail significance. Significance of the correlation was tested with the F-ratio.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

ANALYSIS OF DATA

Major Findings

The results of this investigation examining the factors influencing freshman college achievement as measured by first year cumulative GPA, reveal some new information and confirm other previous findings. Each specific hypothesis is addressed with supportive data and findings. Also, when the data allow, additional tests which more clearly focused on the specific variable studied, have been employed, although such tests were not included in original hypotheses.

Hypothesis One

The results of the analysis of variance procedure comparing GPA and the four-level geographic location variable are inconclusive. The four geographic locations included inside central cities, suburban type areas, urbanized areas with 2500 inhabitants or more not adjacent to metropolitan areas, and rural areas which have less than 2500 inhabitants. A significant F was not found in the original analysis of variance. The probability value, .32, is far above acceptable significance levels. Thus, null Hypothesis One is retained. The geographic location of the high school a subject attended has no significant bearing on his freshman grade point average. Results are displayed in Table I.
The mean scores listed in Table II reveal the finding that a higher GPA among subjects in the Urbanized/Nonmetropolitan category exists when compared to the other three areas.

As Table I indicates, no significant difference was
found, but students living in self-contained urbanized areas, not adjacent to metropolitan areas, tend to score slightly higher than students from other categories. The retention of the null hypothesis indicates no significant difference, although minor differences are present.

**Hypothesis Two**

The results of the analysis of variance procedures comparing GPA and the five-level UIL classification variable are also inconclusive. The results are displayed in Table III.

### TABLE III

ANOVA SUMMARY TABLE FOR UIL CLASSIFICATIONS AND GPA

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2.52</td>
<td>4</td>
<td>.63</td>
<td>.85</td>
</tr>
<tr>
<td>Within Groups</td>
<td>949.21</td>
<td>1272</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>951.73</td>
<td>1276</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The F value, .85, found in the original analysis of variance is not significant at an acceptable probability value (p=.50). UIL classification of high school attended has no significant bearing on freshman GPA.

The mean scores listed in Table IV reveal similar GPA scores among subjects in all UIL classification groups. The
null hypothesis, therefore, is retained although minor differences (though not significant) are found between groups.

TABLE IV

DESCRIPTIVE STATISTICS FOR UIL CLASSIFICATIONS AND GPA

<table>
<thead>
<tr>
<th>UIL Classification</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>95% confidence interval for mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>2.08</td>
<td>.76</td>
<td>.15</td>
<td>1.77 to 2.39</td>
</tr>
<tr>
<td>2A</td>
<td>1.93</td>
<td>.96</td>
<td>.14</td>
<td>1.64 to 2.22</td>
</tr>
<tr>
<td>3A</td>
<td>2.13</td>
<td>.84</td>
<td>.10</td>
<td>1.93 to 2.33</td>
</tr>
<tr>
<td>4A</td>
<td>2.13</td>
<td>.84</td>
<td>.07</td>
<td>2.00 to 2.27</td>
</tr>
<tr>
<td>5A</td>
<td>2.17</td>
<td>.87</td>
<td>.03</td>
<td>2.11 to 2.22</td>
</tr>
<tr>
<td>Total</td>
<td>2.15</td>
<td>.86</td>
<td>.02</td>
<td>2.10 to 2.20</td>
</tr>
</tbody>
</table>

Larger high schools, those in 3A, 4A and 5A, with a range size of 275 to over 1300 students, tend to produce graduates who perform slightly better than their counterparts in smaller schools. For those schools with 274 students or less, the difference in their scores is not statistically significant.

Hypothesis Three

Slightly more than half of the 1277 subjects were classified as female. Data displayed in Table V shows the results of the t test of the difference between the two group means.
TABLE V

T TEST BETWEEN GENDER CLASSIFICATIONS

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of cases</th>
<th>Mean</th>
<th>SD</th>
<th>F-value</th>
<th>2-tail probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>553</td>
<td>2.03</td>
<td>.85</td>
<td>1.06</td>
<td>.50</td>
</tr>
<tr>
<td>Female</td>
<td>724</td>
<td>2.24</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1277</td>
<td>2.14</td>
<td>.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The null hypothesis, that the difference between the two group means is not significant, is retained. The F value, 1.06 and probability level (.50) indicate the absence of statistical significance between means. Although female subjects tend to score higher than male subjects, that difference is not significant. With GPA scores recoded by numerical equivalence to letter, Table VI displays a cross tabulation of subject scores by gender.

TABLE VI

CROSS TABULATION OF SUBJECT SCORES BY GENDER GROUPINGS

<table>
<thead>
<tr>
<th>Gender</th>
<th>GPA score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below .99</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>
Hypothesis Four

Table VII displays the result of a one-way analysis of variance between the means of subjects in the five race categories and indicates that race does have a significant affect on GPA score. The F ratio, 9.78, is significant at the .01 level.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>28.38</td>
<td>4</td>
<td>7.10</td>
<td>9.78</td>
</tr>
<tr>
<td>Within Groups</td>
<td>923.35</td>
<td>1272</td>
<td>.73</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>951.73</td>
<td>1276</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The relatively stringent Scheffe test indicates significant differences between scores of subjects in race category Caucasian and those in race category Afro-American. The less conservative Student-Newman-Kuels procedure revealed differences between both Caucasian and Mexican-American, and the subjects in category Afro-American. The number of subjects in race categories Oriental-American and American Indian were too small to influence the outcome of multiple range tests. The mean scores listed in Table VIII reveal a sharp increase in GPA scores between subjects from categories American Indian and Afro-American. However, multiple range
tests indicate significant differences between Caucasian and other race categories. The data fail to offer evidence supporting retention of the null hypothesis. There is a significant difference in GPA scores among subjects in different race categories. Table VIII displays descriptive statistics for race categories and GPA.

**TABLE VIII**

DESCRIPTIVE STATISTICS FOR RACE CATEGORIES AND GPA

<table>
<thead>
<tr>
<th>Race</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>95% confidence interval for mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>2.02</td>
<td>.87</td>
<td>.03</td>
<td>2.15 to 2.25</td>
</tr>
<tr>
<td>Afro-American</td>
<td>1.77</td>
<td>.74</td>
<td>.06</td>
<td>1.64 to 1.90</td>
</tr>
<tr>
<td>Oriental-American</td>
<td>2.33</td>
<td>.87</td>
<td>.29</td>
<td>1.67 to 3.00</td>
</tr>
<tr>
<td>American Indian</td>
<td>.50</td>
<td>.70</td>
<td>.50</td>
<td>-5.85 to 6.85</td>
</tr>
<tr>
<td>Mexican American</td>
<td>2.07</td>
<td>.85</td>
<td>.12</td>
<td>1.82 to 2.31</td>
</tr>
<tr>
<td>Total</td>
<td>2.15</td>
<td>.86</td>
<td>.02</td>
<td>2.10 to 2.20</td>
</tr>
</tbody>
</table>

**Hypothesis Five**

The correlation between the score of the admission test of each subject and GPA is a low but positive one. The correlation, (N=1277) .33, is statistically significant at the .01 level. Therefore, it may be concluded that as the scores of the admission test increase, there is a slight
tendency for GPA to increase.

Null Hypotheses One, Two, and Three were retained because the demographic variables of geographic location, UIL designation, and gender had no statistically significant impact on student achievement. Null Hypothesis Four was rejected because the race variable was found to be significantly different. The procedure used to determine correlation of admission test scores and GPA in Hypothesis Five shows that a correlation, although low, does exist between the independent and dependent variable.

**Additional Findings**

Additional findings include the overall results of admission test scores. The mean score for the ACT or equivalent SAT score for the group studied was 21.08, with a standard deviation of 5.03. The minimum score was three with 43 listed as the maximum. Other information from the continuous variable reflected a mean cumulative grade point average of 2.15 with a standard deviation of .86 for those who attended as freshmen for both the fall and spring semesters. Forty-three per cent of the subjects studied were male while the Caucasian race provided the majority of the students or 84.80 per cent. Slightly over ten per cent of the population was Afro-American and 3.7 per cent, Mexican-American. Less than one per cent of the total population was either Oriental-American or American Indian.
The largest single group of students, 985, belonged to the UIL 5A classification. The number of students in the remaining UIL groups lessened proportionately with the UIL classification codes: 4A, 153 students; 3A, 69 students; 2A, 45 students; and 1A, 25 students. Table IX provides a summary of the results of all variables tested.

**TABLE IX**

<table>
<thead>
<tr>
<th>FREQUENCIES FOR ALL TESTED VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>Race</td>
</tr>
<tr>
<td>Caucasian</td>
</tr>
<tr>
<td>Afro-American</td>
</tr>
<tr>
<td>Amer. Indian</td>
</tr>
<tr>
<td>Mex-American</td>
</tr>
<tr>
<td>Oriental-American</td>
</tr>
<tr>
<td>UIL Class</td>
</tr>
<tr>
<td>1A</td>
</tr>
<tr>
<td>2A</td>
</tr>
<tr>
<td>3A</td>
</tr>
<tr>
<td>4A</td>
</tr>
<tr>
<td>5A</td>
</tr>
<tr>
<td>Geograph Loc.</td>
</tr>
<tr>
<td>MSA</td>
</tr>
<tr>
<td>OCC</td>
</tr>
<tr>
<td>U/NM</td>
</tr>
<tr>
<td>RA</td>
</tr>
</tbody>
</table>

Inner city students composed 25.8 per cent of the population while the rural composition was only 6.5 per cent.
Data in Table X reflects summary information and includes a cross tabulation of GPA success by race, by gender, by geographic location, and by school size.

**TABLE X**

CROSS TABULATION OF GPA SUCCESS BY RACE BY GENDER BY GEOGRAPHICAL LOCATION BY SCHOOL SIZE

<table>
<thead>
<tr>
<th>Race</th>
<th></th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Below 1.6</td>
<td>Above 1.6</td>
</tr>
<tr>
<td>Caucasian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Large</td>
<td>90</td>
<td>312</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Large</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Afro-Amer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Large</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Large</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mex-American</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Large</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
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<td>1</td>
</tr>
<tr>
<td>Large</td>
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<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>134</td>
<td>141</td>
</tr>
</tbody>
</table>

The information about race includes Caucasian, Afro-American and Mexican-American but deletes Oriental-American.
and American Indian because the number of subjects in each of the latter categories failed to influence the outcome of multiple range group tests. Although there are a large number of Oriental students enrolled in graduate studies, there were very few attending as freshmen. As more families of Southeast Asian refugees mature, undergraduate Oriental enrollment is almost certain to increase. The small number of self-reported ethnic American Indians is possibly the result of assimilation into Caucasian societal structure. Geographic locations were combined with Metropolitan Statistical Areas and Outside Central Cities recoded as 'city'. Urbanized/Nonmetropolitan and Rural were recoded 'country'. UIL classification was relabeled with classes 1A, 2A, and 3A designated 'small' and classes 4A and 5A designated 'large'. A major tenet for the significance of the study concerned the general prediction of academic success. While the term 'success' is qualitative in nature, an operational definition has been adopted for the purpose of data analysis. Those students whose cumulative GPA was 1.6 or above were designated 'successful' because by university policy such students were neither placed on scholastic probation, removed from the university, nor prohibited from continuing in a chosen course of study appropriate for freshmen classification.
Summary

Numerous factors influence the way humans react to certain situations, opportunities and experiences. Although attitudes and similar elements are almost impossible to measure, demographic variables can be examined to test for effect or related importance. This study was an attempt to determine the impact of variables such as race, gender, geographic location, size of high school and college admission test scores on college freshman achievement.

The related literature for this study was reported in four sections. Section One, concerning school inputs and their affect on achievement, determined that there is a great deal of variation due to societal changes and because the variables themselves differ widely in effect as well as strength of effect. Section Two, dealing with urban and rural influences on academic success, was inconclusive due to the lack of a uniform definition of urban and rural. In a number of studies the achievement variable was associated with urban and rural variables when it could just as easily have been related to socioeconomic and educational background of parents. Section Three, which focused on the impact of gender and social class, yielded some distinctive achievement
types. While gender may be a strong predictor of success, social class is more consistently correlated with achievement. Section Four, on studies relating to college admissions tests, showed that both the SAT and the ACT are good predictors of success. The predictive value of the tests however, is not independent of the other demographic variables examined in other sections of the literature.

The group used for this study, one year of freshmen students at a large multi-purpose regional state university, was selected in part because such a population should reflect a cross-section of subjects of each of the variables chosen for study. The instrument used to measure college achievement was the cumulative grade point average, which served as the dependent variable for all hypothesis testing. Demographic variables included gender, race, geographic location of high school, University Interscholastic League (UIL) classification and college admission test scores. Both ACT and SAT are accepted in admissions criteria at the university from which the population was drawn. Thus, both tests were used as demographic variables for comparison with college achievement as measured by GPA. The inherent differences in the two tests, while recognized, are minimized for the purpose of this study. With the more precise SAT scores recoded to reflect the their ACT equivalent, both test scores were manipulated using the reporting format of the ACT.
Findings

Major Findings

Hypothesis one—Null hypothesis one is stated, "There will be no significant difference in the GPA obtained by students when classified by geographic location."

Results indicated that there are no significant differences in GPA scores when subjects are classified by geographic location. The null hypothesis was, therefore, retained. The F-value was 1.8 while the probability was .32. The subjects from the Urbanized/Nonmetropolitan category tend to score slightly higher on freshman cumulative GPA than those from Metropolitan Statistical Areas, Outside Central Cities, and Rural Areas. This difference, however, was far from significant. The specific definitions of geographic location as provided by the Census Bureau and adopted for this study created some overlap in qualitative student type. The lack of statistical significance (high probability value) in Hypothesis One is not surprising because of the statewide attempt to provide a uniform curriculum, the efforts of the Board of Equalization, and state adopted textbooks have gone far toward making Texas public schools bias free in course content. Standardized testing also contributes to this equalization attempt. Due to stronger communication links, what were once remote geographic locations are no longer areas set apart from opportunities available to metropolitan
locales. Access to modern modes of transportation, television, video and other technological advances have created a more homogeneous society and a decline in regionalism. Sampling error might also be a factor as demonstrated by the relatively wide standard deviation (.86).

**Hypothesis two**—Null hypothesis two is stated, "There will be no significant difference in the GPA obtained by students when classified by high school UIL designation."

Results indicated that there were no significant differences in GPA scores when subjects were classified by high school UIL designations. The null hypothesis was, therefore, retained. The F-value was .85 while the probability was .50. Although subjects from large schools (4A,5A) tend to score slightly higher on freshman cumulative GPA than do those from smaller schools (3A,2A,1A), the difference was not significant.

There should be a positive correlation between UIL classification and geographic location. Though probably not perfect, that relationship is apparent in the clustering of large and small school size. Therefore, it is not surprising that UIL classification, like geographic location, did not yield significantly different mean GPA scores. In terms of quality, high school size as defined by UIL, can be misleading. While larger schools may be able to offer varied programs and a more diversified curriculum, contact hour time in basic instruction can be diluted and scheduling can be a
problem. Small schools, on the contrary, may lack program offerings or experience financial constraints, but may have a much lower teacher-pupil ratio, a more cohesive faculty and a stronger emphasis on the 'whole student'. Due to unequal cell sizes, the large standard deviation of .86 possibly indicates sampling error.

**Hypothesis three**—Null hypothesis three is stated, "There will be no significant difference in GPA obtained by students when classified by gender."

Results indicated that female subjects tend to have higher GPA scores than male subjects, but not enough to make a significant statistical difference. The F value was 1.06 while the probability level was .50. The F value was not statistically significant, thus null Hypothesis Three was retained. The unacceptable probability level also points to retention of the null hypothesis. There is a noticeable, but not statistically significant difference between mean GPA scores when subjects are classified by gender. Since as college freshmen both males and females have similar backgrounds and educational experiences, it is not surprising that there was no significant difference in their achievement levels.

**Hypothesis four**—Null hypothesis four is stated, "There will be no significant difference in GPA obtained by students when classified by race."

Results indicated that there are significant differences
in GPA scores when subjects are classified by race. The null hypothesis was not retained. The F-value was 9.77, while the probability level was above .01. Oriental-American and Caucasian subjects tend to score higher on freshman cumulative GPA than do Afro-American, American Indian, or Mexican-American subjects. The findings generally support available literature on the subject. The chance of a proxy variable being involved was highly likely. It should also be considered that the measurement of race may be the same or closely related to the measurement of social class and background, family stability and parental expectations. Likewise, there is probably a positive relationship between race, UIL and geographic location. Although the analysis of variance procedure imposes statistical controls for unequal sample sizes, the wide discrepancy in cell size may have skewed results. For example, the Oriental-American and American Indian groups were too small to register in even the least conservative multiple range tests.

**Hypothesis five**—Research hypothesis five is stated, "There will be a significant positive correlation between college admission tests and first year college performance (GPA)."

Results indicated that the correlation between admission test scores and GPA, .33, is a weak but positive one. Thus, the hypothesis was retained. Since first year college GPA and admission test scores each measure general knowledge, the
positive correlation was to be expected. This finding also supports the available literature that refers to the ability of the ACT and SAT to predict college freshmen GPA. Since earlier findings showed high schools to be parallel in their influence, it seems understandable that admissions tests assessing the same knowledge would have similar results.

Conclusions

Based on data interpretations of this study, it can be concluded that most demographic variables have very little affect on college freshmen achievement. Although geographic location and UIL classifications are interesting variables to consider because they offer a study of diverse settings and sizes, apparently their influence has only a minimal impact on freshman GPA scores. Like size and location, gender cannot be considered a major influence on how well students achieve as college freshmen.

It is evident that race is a significantly predictive variable concerning college academic performance. Researchers should realize, however, that there are other social, cultural and economic factors which are closely related to the race variable which should be considered when analyzing the impact of a student's heritage on his college achievement.

As related literature suggested and this study showed, college admission tests do have predictive value for
determining the academic success of college freshmen. Therefore admission tests are one effective measure used as college admissions criteria.

Recommendations for Implementation

The following recommendations are made as a result of this study.

1. Since college admissions tests arguably measure aptitude and/or achievement, but do not measure psychological constructs such as creativity and motivation, more flexible admissions policies should be considered at all state colleges and universities.

2. Judicious use of college admission preparatory courses should be offered at the high school level so that the college admission test score is a more accurate reflection of the aptitude of each individual student.

3. School counselors, administrators and parents should use information gleaned for prediction of academic achievement and avoid expectations based on mythical stereotypes as to gender, school size and geographic location.

4. For the highly predictive variable of race, the traits associated with this variable should receive attention and remediation, as the variable itself is unchangeable.

Recommendations for Further Study

The following recommendations for further research are
made as a result of this study.

1. The study should be replicated with a population or sample selected from a college or university with a narrower demographic base such as a private school or one with a stronger academic focus. In addition, the same study replicated in a similar college or university addressing regional aspects, but conducted outside of Texas might glean dissimilar results.

2. A similar study should be conducted in greater detail to ascertain more information on each subject such as socioeconomic background, high school GPA and rank, high school extracurricular activity, college major and qualitative or self-reported attitudinal scales.

3. A study should be instituted in which college academic progress is monitored closely so as to provide individual advice concerning degree plans and remedial work where needed. The current formula system, both for admissions and determination of scholastic probation, is efficient and meets the needs of a majority of students. Those students who fall outside the predictions established with the demographic variables of this study are, however, not given flexible alternatives for dealing with nonadherence to formula predictions.

4. Further research should be conducted about high school rank in class and high school GPA. By its nature, a large multi-purpose regional college or university is likely
to attract students with widely varying high school backgrounds. For example, some metroplex school systems offer sophisticated Advance Placement programs which enable high-ranking graduates to compete for places in the freshmen classes of highly competitive and nationally recognized colleges. At the same time, graduates from other less sophisticated high school backgrounds may be limited in what may reasonably be expected for both college admissions and achievement.

5. A similar study should be conducted to measure differences in academic achievement between the full-time student as defined for this study and the nontraditional student who may be less than full-time or not enrolled in college immediately upon graduation from high school. Other demographic variables might be included in order to more fully explain the nature of any found differences.

6. A similar comparison study using junior college freshmen and freshmen at a major four-year college or university might provide a clearer picture of freshmen college success and yield an overall profile for a study.

7. Some of the findings in this study must be prefaced with a caution concerning sampling error which resulted in widely dissimilar cell size. A carefully stratified sample including fewer non-fluid independent variables would be more instructive in determining real effects. Also, a pilot study to glean population information preceding the implementation
of the primary study would have allowed better focus and more predictive hypothesis tests.
APPENDIX A

METROPOLITAN STATISTICAL AREAS (INSIDE CENTRAL CITY)
APPENDIX A

METROPOLITAN STATISTICAL AREAS (INSIDE CENTRAL CITY)

Texas has 27 Metropolitan Statistical Areas as defined by the U.S. Office of Management and Budget and the Office of Statistical Policy (Census Bureau) of the U.S. Department of Commerce.

The metropolitan designations are made to the population centers that meet certain criteria, which are characteristic of the urban cores and suburban clusters that form around them.

The 27 MSA inside centers are as follows:

1. Abilene
2. Amarillo
3. Austin
4. Beaumont-Port Arthur-Orange
5. Brownsville-Harlingen-San Benito
6. Bryan-College Station
7. Corpus Christi
8. El Paso
9. Dallas-Ft. Worth
10. Ft. Worth-Arlington
11. Galveston-Texas City-Brazoria
12. Killeen-Temple
13. Houston
14. Laredo
15. Longview-Marshall
16. Lubbock
17. McAllen-Edinburg-Mission
18. Midland
19. Odessa
20. San Antonio
21. San Angelo
22. Sherman-Dennison
23. Texarkana
24. Tyler
25. Victoria
26. Waco
27. Wichita Falls
APPENDIX B

METROPOLITAN STATISTICAL AREAS (OUTSIDE CENTRAL CITY)
APPENDIX B

METROPOLITAN STATISTICAL AREAS (OUTSIDE CENTRAL CITY)

Note: Any town or village located in a county not on the following list has less than 2,500 inhabitants and is, therefore, considered rural.

COUNTIES:
1. Callahan, Jones, Taylor
2. Potter, Randall
3. Travis, Hays, Williamson
4. Jefferson, Orange, Hardin
5. Cameron
6. Brazos
7. San Patricio, Nueces
8. El Paso
9. Dallas, Tarrant, Denton, Collin, Rockwall, Kaufman, Ellis, Johnson, Hood, Parker, Wise
10. Tarrant
11. Galveston, Brazoria
12. Bell, Coryell
13. Harris, Ft. Bend, Liberty, Montgomery, Waller
14. Webb
15. Gregg, Harrison
16. Lubbock
17. Hidalgo
18. Midland
19. Ector
20. Tom Green
21. Bexar, Comal, Guadalupe
22. Grayson
23. Bowie
24. Smith
25. Victoria
26. McLennan
27. Wichita, Clay
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