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Understanding the Relationship Between Nutritional Status, Obesity, and Academic Achievement

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Understanding the Relationship
Between Nutritional Status,
Obesity, and Academic Achievement
By Hannah Schmunk

A DEPARTMENT HONORS THESIS SUBMITTED TO THE
DEPARTMENT OF Sociology and Anthropology AT TRINITY UNIVERSITY
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Between Nutritional Status,
Obesity, and Academic Achievement**

Hannah Schmunk
Sociology Honors Thesis
2009-2010

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INTRODUCTION

In addition to the worst economic crisis in several generations, two other societal “epidemics” have recently received broad public attention: the failure of the American educational system, with one out of six students dropping out of school before graduation (The White House 2010), and the expanding obesity rate. This research paper explores connections between the two.

The United States is facing a serious public health problem. A mere two percent of children meet the daily recommendations in the *Dietary Guidelines for Americans* for consuming foods from all five categories in the Food Pyramid. Children are not eating healthy, well-balanced diets and, as a result, there is a rising incidence of malnutrition (Schafft 2009). According to the United States Department of Agriculture, childhood obesity has reached “epidemic proportions” with 4.7 million individuals, ages 6 to 17, currently considered overweight or obese. Research indicates that children who are overweight or obese have a greater likelihood of suffering from high blood pressure, high cholesterol, diabetes, heart disease, stroke, cancer, and various other illnesses (USDA 2010). In addition, a recent study in the *New England Journal of Medicine* claims that the average life expectancy of today’s children may decrease by two to five years due to obesity-related health problems. This would represent the first reversal in the steady rise in life expectancy of Americans over the past two hundred years and would result in the first downwardly mobile generation (Ludwig 2007).

The rise in overweight and obesity rates in the United States is socially and environmentally related and research has demonstrated that these rates are higher in low-income communities (Hofferth 2005). Poverty on the global level is usually associated with underweight as a result of poor diet and lack of sufficient food. Thus, researchers’ recent discovery may

come as a surprise: low income and obesity coexist in the United States. Paradoxically, poverty and limited food access is associated with increased rates of obesity (Hofferth 2005).

Diet is a major determinant of body mass index and overweight/obesity status. Obesity is measured using body mass index (BMI) which is calculated as weight in kilograms divided by the square of height in meters. While various definitions of “overweight” and “obesity” exist, the American Obesity Association defines overweight for adolescents, ages 13-17, as body mass index greater than 25 or body mass index greater than the 85th percentile of the population. Obesity is defined as body mass index greater than 30 or body mass index over the 95th percentile (Taras & Potts-Datema 2005).

Malnutrition affects every organ system in the body and causes impairment of physical growth, immune response, and cognitive functioning. Weakened immune systems make children more susceptible to severe and chronic infections which further exacerbate nutritional problems. Thus, malnourishment detracts from school attendance. Additionally, malnourished children suffer from slow rates of brain development, low brain weight, a thin cerebral cortex, decreased numbers of neurons, deficient myelination, changes in dendritic spines, etc. (Shashidhar 2009).

Malnutrition has significant and enduring effects on the neurological development and behavioral capacity of children. Children who do not eat a balanced diet, even for a short time, can develop problems with their physical, emotional, and cognitive development. Research indicates that even mild malnutrition experienced by children during critical periods of growth can impair their behavior and school performance (The Hunger Site 1999).

Accordingly, malnourished children may never reach their full intellectual or educational potential (Greene 1977). One century ago, muckraker Robert Hunter expressed his concern for malnourished children in school. His argument is still valid today:

" . . . but the poverty of any family is likely to be most serious at the very time when the children most need nurture, when they are most dependent, and when they are obtaining the only education which they are ever to receive . . . Learning is difficult because hungry stomachs and languid bodies and thin blood are not able to feed the brain. The lack of learning among so many poor children is certainly due, to an important extent, to this cause . . . It is utter folly, from the point of view of learning, to have a compulsory school law which compels children, in that weak physical and mental state which results from poverty, to drag themselves to school and to sit at their desks, day in and day out, for several years, learning little or nothing. If it is a matter of principle in democratic America that every child shall be given a certain amount of instruction, let us render it possible for them to receive it, as monarchial countries have done, by making full and adequate provision for the physical needs of the children who come from the homes of poverty" (1904).

Nutritional status, which encompasses malnutrition, has a profound influence on educational progress. Previous literature suggests that "nutrition is an endogenous factor that affects learning ability and skills before and after the child is in school" (Pollit 1984: 7). Children who consume insufficient, excessive, or imbalanced quantities of nutrients are more likely to struggle in an academic setting. They are at an educational disadvantage which compounds through the years of childhood and adolescence and can conceivably cause children to have lower levels of aspiration, accomplishment, and even intelligence.

Research consistently demonstrates that overweight and obese children are more likely to have low self-esteem and have higher rates of anxiety disorders, depression, and distress. These mental health conditions are thought to be the "mediating factors for an overweight or obese child to score poorly in school" (Taras & Potts-Datema 2005: 292).

According to early sociologist Charles Horton Cooley, obesity is not only a health condition but also a social status. In his book *Human Nature and the Social Order* (1902), Cooley claims that individuals' self-concepts are dependent on how others view them and how their characteristics agree with collective norms. This theory is similar to the "looking glass self." Cooley explains that "the lack of fit between an individual's characteristics and larger

normative structures typically hampers adjustment and functioning” (Crosnoe & Muller 2004: 394). Obesity is currently a socially stigmatized trait that generates negative feedback during adolescence. This negative feedback can be internalized, leaving an individual feeling sad or depressed. In today’s society obese individuals are often considered less desirable than their non-obese counterparts and, consequently, they are more apt to develop a low self-esteem and become socially isolated. The stigmatized nature of obesity has the potential to hinder successful functioning and previous research indicates that the stigma of obesity is greatest among adolescents (Ross 1994).

Robert Crosnoe states, “Responses to the stigma of obesity set the stage for truncated trajectories of educational attainment in the long run” (Crosnoe 2007: 243). Several studies show that obese students tend to achieve lower grades than their non-obese peers. Crosnoe acknowledges that, while no consistent evidence links obesity with intelligence, its flagrant devaluation in American society may be a reason for the relationship between obesity and poor academic performance. Lower academic achievement can inhibit success later in life, thus disrupting long-term status attainment. Social status influences health, as it affects lifestyle, access to health care, physical environment, and diet. Consequently, obesity can “produce economic inequality and exacerbate health inequality between obese and non-obese individuals” (Crosnoe 2007: 242).

While reasons for the obesity epidemic are wide-ranging, the fatty lunches, sugary soft drinks, and fast-food items that are commonplace in schools are partly to blame. The National School Lunch Program is a federally-assisted meal program established under the National School Lunch Act of 1946. The program operates in over 101,000 public and non-profit private schools and residential child care institutions. In 2008, it provided reduced cost or free lunches

to more than 30.5 million children every school day (USDA 2009). The United States Department of Agriculture claims that the National School Lunch Program provides nutritionally balanced lunches, stating:

“School lunches must meet the applicable recommendations of the 1995 Dietary Guidelines for Americans, which recommend that no more than 30 percent of an individual's calories come from fat, and less than 10 percent from saturated fat. Regulations also establish a standard for school lunches to provide one third of the Recommended Dietary Allowances of protein, Vitamin A, Vitamin C, iron, calcium, and calories. School lunches must meet Federal nutrition requirements, but decisions about what specific foods to serve and how they are prepared are made by local school food authorities” (USDA 2009).

Unfortunately many studies have established that the school lunch program meals often fail to meet nutrition requirements and have an especially high fat content. Research has demonstrated that “students who eat school lunches are more likely to be overweight than their classmates who brown bag their lunch” (Schanzenbach 2005: 1). According to one study, children who eat school lunch consume 40 to 120 more calories each day at lunch compared to children who bring their own lunch. Over time these additional calories increase the incidence of overweight and obesity. (Schanzenbach 2005). Thus, many believe that the National School Lunch Program has contributed to the childhood obesity epidemic.

Lunches in some schools have higher levels of sugar, fat, and salt than others, and this irregularity is not arbitrary. On a macro level, democratic political theory prescribes equal opportunity for all citizens. Furthermore, public education in the United States has long promised equal education for all children, regardless of ethnicity, race, or income. It is apparent, however, that opportunities for learning are unequal in the United States. Simply stated, the quality of education available to some children is better than what is available to others, and the same goes for the quality of school lunch. This inequality is not random. Children from lower- and working-class families attend inferior schools compared to those of the middle and upper

classes. Money and resources are differentially allocated to schools serving different social classes. The discrepancy in resources among schools places poor students at a major disadvantage. Not only do their schools have fewer funds for materials, programs, and equipment, but they have less money to spend on healthy food options.

Children of affluent families are able to spend more money at lunch time, allowing their schools to make a profit and offer more expensive, healthy foods. In contrast, children from poor families qualify for free or reduced lunches, meaning their schools do not make a profit on meals served. Instead, they are reimbursed for the meals by the government. While wealthy schools are increasingly able to offer organic foods costing 30 percent more than conventionally produced food, many low-income schools can barely afford to provide a meal that meets federal nutritional guidelines (Organic Authority 2010). The inequality in meals served between wealthy and poor school districts sends a very negative message: poor students are not worth a healthy meal. While the school system is willing to sustain their lives, they are not willing to provide a nutritious meal that will provide the energy necessary for optimal learning and productive behavior. This is a variation of structural violence that exemplifies Karl Marx's conflict theory. The school is a culprit in maintaining an established pattern of stratification in a new economic era of cognitive labor. This educational disadvantage is compounded through the years of childhood and can cause children to have lower levels of aspiration, accomplishment, and even intelligence.

In order to make ends meet, cash-strapped schools make controversial deals with fast-food vendors. These arrangements further contribute to the nutritional disadvantage of poorer children. The percentage of school funding that comes from the federal government hovers around 10 percent, leaving 90 percent of a huge budget to local and state sources. For the most

part, this funding comes from property taxes, leaving schools in low-income neighborhoods to search for alternative sources of funding. Commercial contracts have become a common way for gaining funds and acquiring suitable technology and equipment (PBS 2002).

Commercialism in schools has increased nearly four times in the past decade. Critics and some parents are concerned about what this teaches “the so-called fast-food generation” (PBS 2002: 1). Other parents, teachers, and administrators support such sponsorship as it provides a good source of money for impoverished schools. Schools are forced to make tough decisions. For some schools, the decision comes down to selling soda and candy bars or doing without software, offering yet another example of Marx’s conflict theory. Contracts and vending-machine deals provide a large source of income for schools while also contributing to the high rates of overweight and obesity among children and adolescents. The Center for Disease Control conducted a School Health Policies and Programs Study (SHPPS) in 2000 where they surveyed state education agencies, school districts, and food service representatives. Results indicated that half of all school districts have soft drink contracts and one third of schools allow advertising for food and drinks in their buildings. Furthermore, approximately 56 percent of elementary schools and 93 percent of high schools allow students to purchase soft drinks in vending machines, cafeterias, or school stores (Taras 2005). While 50 percent of high schools in the United States offer chocolate candy for sale, only a mere 18 percent of high schools offer fruits and vegetables for sale (PBS 2002). The food and drinks served in vending machines and *a la carte* lines undermine efforts to improve the health of the school environment. Childhood nutrition could be greatly improved by eliminating sugary drinks and fatty snacks from school vending machines or by getting rid of vending machines all together.

Few research studies have examined the relationship between nutritional status, obesity, and school performance. Currently, there is a lack of understanding about the causal connections between obesity and poor academic performance. The first step in understanding this causal connection is to establish a basic correlation that takes into account differences in student economic disadvantages. This is the intent of the present study.

It is hypothesized that the social class, nutritional status, school meal programs, and physical fitness of children have a major influence on their academic performance. The study's independent variables are: percent of students considered economically disadvantaged (equivalent to the percent of students who qualify for free or reduced school lunch), estimated percent of students considered overweight or obese, quality of meals served in the school lunch program, and Healthy Fitness Zone (HFZ) achievement. The study's dependent variable is academic performance which is measured by attendance rate, TAKS scores, TSI scores, and percent at-risk.

METHODS

To explore the connections between social class, nutritional status, school meal programs, physical fitness of children, and academic achievement, multiple methodologies—both quantitative and qualitative—are triangulated.

The Quantitative Measures

Data for this research was drawn from the Texas Education Agency (TEA), which provided data from each Bexar County school district for the 2007-2008 school year. The school district-level information provided by the TEA includes the total number of students, racial composition, attendance rate, percent of students considered to be “economically

disadvantaged,” percent of students considered to be “at-risk,” food service expenditures, Texas Assessment of Knowledge and Skills (TAKS) scores, TAKS exit-level pass rates, Texas Success Initiative (TSI) Higher Education Readiness Component scores, and physical fitness data. The agency employs thirteen criteria to identify students as “at-risk,” outlined in the Texas Education Code as the following:

1. Students who fail to advance to the next grade level for one or more years.
 2. Students in grades 7-12 who receive a grade of less than 70 (out of a 100) in two or more curriculum subjects in the current or preceding year.
 3. Students who did not meet satisfactory performance levels on state administered tests (TAKS).
 4. Students in PK, K, or grades 1-3 who did not perform at a satisfactory level on the readiness test.
 5. Students who are pregnant or who are parents.
 6. Students placed in alternative education programs during the current or preceding year.
 7. Students who were expelled in the current or preceding year.
 8. Students on parole, probation, deferred prosecution or conditional release.
 9. Students who had previously dropped out.
 10. Students with Limited English Proficiency.
 11. Students in or who have been referred to the Department of Protective or Regulatory Services.
 12. Students who are homeless.
 13. Students who were in or are currently in residential treatment facilities.
- *Note there is no criteria regarding family income or socioeconomic status.

The Texas Education Agency defines students as “economically disadvantaged” if they receive free or reduced-price school lunches, or if they qualify for other public assistance. Students are eligible for free lunches if their family income is less than 130 percent of the federal poverty level. Students are eligible for reduced-price lunches if their family income falls between 130 percent and 185 percent of the federal poverty level. The federal poverty level is published each year by the United States Department of Health and Human Services (HHS). For a family of four in 2009-2010 the poverty level is \$22,050. Thus, a child from a family of four qualifies for reduced-price lunch if his/her family income falls between \$28,665 and \$40,793 and a child qualifies for free lunch if his/her family income is less than \$28,665.

Scores from the Texas Assessment of Knowledge and Skills (TAKS) and the Texas Success Initiative (TSI) were used to evaluate the academic performance of students in each Bexar County school district. The TAKS is a standardized test administered to public school students in grades 3 through 11. The TAKS measures the extent to which a student has learned, understood, and is able to apply the concepts and skills expected at each grade level. Students are assessed in reading, writing, math, science, and social studies. The TSI is a program that evaluates a student's ability to be successful in college. It includes a testing component designed to measure the reading, mathematics, and writing skills of each student. Students who fail a section of the assessment are required to work with an advisor to develop a plan for academic success and must retest all failed sections. Students are required to meet TSI requirements before graduation.

Physical fitness data was collected from the Physical Fitness Assessment Initiative (PFAI) mandated by the Texas Education Agency. The PFAI program is designed to collect physical fitness data from all Texas students enrolled in grades 3 through 12 and, while many variables are involved in this assessment, this study utilizes the variable "percent not achieving HFZ on any assessment" to measure physical fitness. The Healthy Fitness Zone (HFZ) is a standard established by The Cooper Institute of Dallas, Texas, which represents a minimum level of fitness sufficient to protect against the various diseases that result from sedentary living. Thus, this study defines students who cannot achieve the HFZ standard as physically unfit.

In its original form, the PFAI data was aggregated by campus, grade, and gender for the 2007-2008 school year. In order to obtain statistics on the district level, male and female data for each grade level was combined and then converted from grade level to school level. Lastly, all school campuses were averaged, thus creating a dataset that evaluates the physical fitness on the

district level. In the original dataset, aggregates with less than five total students were masked (to protect the privacy of individual students) and were documented as “< 5.” For the purpose of this study, aggregates with less than five total students were converted to 2.5, the midpoint.

In any secondary research analysis, the researcher lacks control over how information is collected and presented. Thus, reliability and validity of the current study is dependent on the original studies performed by the Texas Education Agency. Any errors that may have occurred in collecting and reporting information have the potential to reduce the measurement validity of this study. Fortunately, no clear errors have been identified in these datasets.

The Qualitative Measures

Three face-to-face interviews were conducted with the district level Director of Food Services in order to acquire information on obesity rates within the school districts and to understand the effect school lunch programs possibly have on the academic achievement of San Antonio school children. Interviews were conducted at Randolph Field, Boerne, and Harlandale Independent School Districts, involving a total of approximately four hours of interview time. Boerne and Harlandale Independent School Districts were selected on the basis of their exceptionally low and high percentages of economically disadvantaged students. Randolph Field Independent School District was selected for an interview due to its status as a military installation, meaning it serves the dependents of active duty members of the military. Furthermore, a large portion of the district’s student population lives on the Randolph Field Air Force Base.

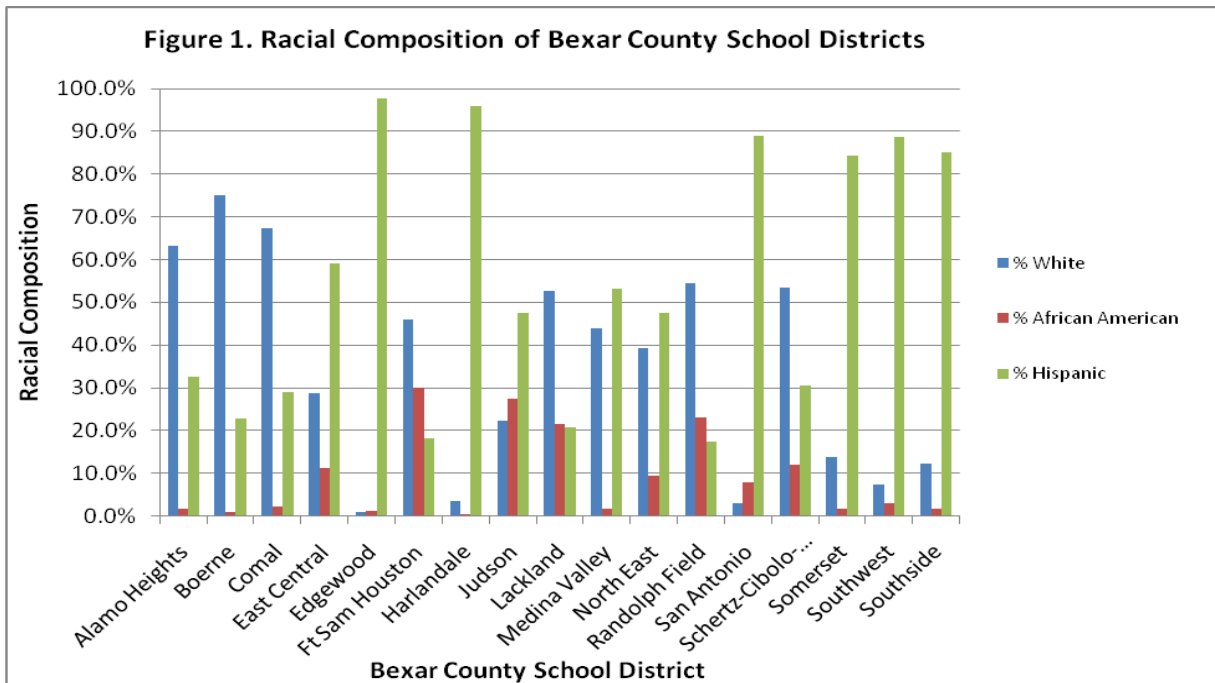
Admittedly, interviews can be low in reliability, and their validity is dependent on the knowledge, objectivity, and candor of the respondent. According to the Halo Effect, respondents may give inaccurate responses in an attempt to impress or please the researcher. It is possible

that the respondents exaggerated the quality and success of their programs, however there is no way to know the extent to which the participants responded in ways they presumed would please the interviewer. Nevertheless, no methodological problems have been identified.

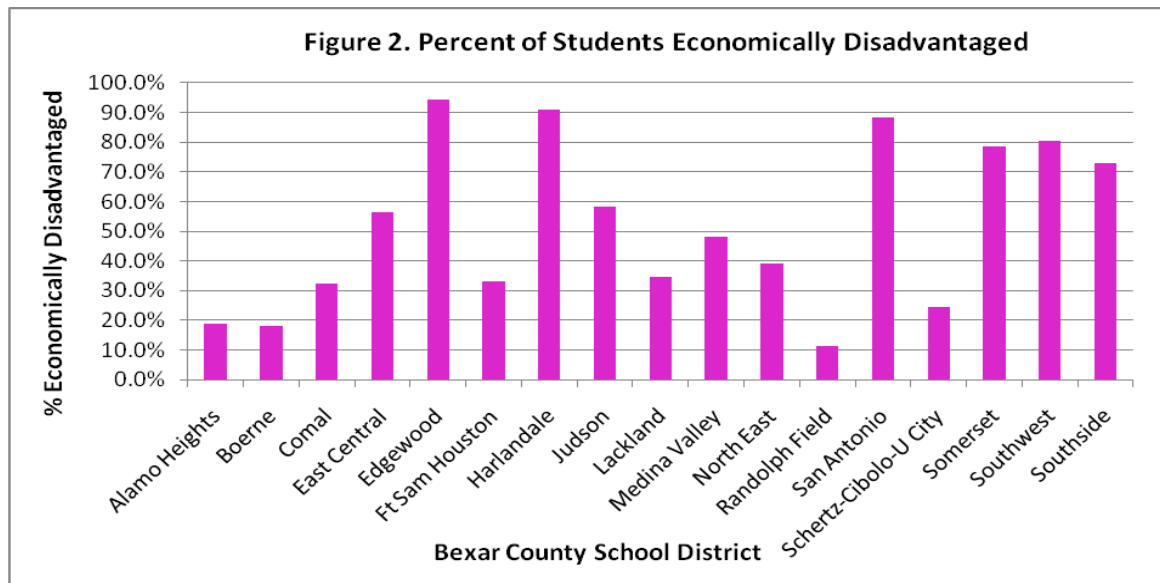
In addition, on-site observations were made of the surrounding areas of three high schools within the school districts selected for interviews. The proximity of fast-food restaurants, especially, was documented.

DATA ANALYSIS

There are seventeen school districts in Bexar County and they vary considerably in racial composition, as evident in Figure 1. Boerne has the largest percent of white students and Edgewood has the least. Ft. Sam Houston has the largest percent of African-American students while Harlandale has the least. Edgewood has the largest percent of Hispanic students while Randolph Field has the lowest percentage.



These districts also vary dramatically in their proportions of economically disadvantaged students. Randolph Field has the lowest percent of economically disadvantaged students, followed by Boerne and Alamo Heights. Edgewood has the most economically disadvantaged students, with Harlandale and San Antonio falling close behind.



Because students are defined as “economically disadvantaged” if they receive free or reduced-price school lunches, schools with high percentages of economically disadvantaged students likely have a large number of students participating in the lunch program. In contrast, schools with low percentages of economically disadvantaged students are apt to have fewer students participating in the school lunch program.

Boerne Independent School District was selected to be interviewed on the basis of its considerably low percentage of economically disadvantaged students. In the 2008-2009 school year, the school district served a total of 6,275 students, who were 75 percent White, 22.6 percent Hispanic, and 0.9 percent African-American. Of these students, 18.4 percent were deemed economically disadvantaged. Thus, the district has a low level of participation in the

school lunch program. The district's expenditures on food services totaled \$2,285,243, which is \$367 per student. This is equivalent to 4.1 percent of the district's total annual expenditures.

In contrast, Harlandale Independent School District was chosen to be interviewed due to its especially large percentage of economically disadvantaged students. The racial make-up of the students in the district for the 2008-2009 school year was 96.1 percent Hispanic, 3.1 percent White, and 0.6 percent African-American. Of these students, 90.7 percent were deemed economically disadvantaged, meaning the district has an exceptionally high level of participation in its school lunch program. The district's expenditures on food services totaled \$9,521,790 which comes out to \$675 per student, or 84 percent more than Boerne. Thus, a greater proportion of students eat the food provided by the school district – food that is of questionable nutritional value. Food service expenditures represent 7.8 percent of the district's total annual spending. This percentage is notably higher than Boerne's and, as will be seen, correlates negatively with academic performance.

As stated earlier, Randolph Field Independent School District was selected to be interviewed because of its status as a military base. This means that all students are the children of Randolph Air Force Base military personnel. Most students live on the base, making it a living and educational environment different from most school districts. Nonetheless, like Boerne, it has an especially low percentage of economically disadvantaged students. Only 11 percent of its 1,203 students are economically disadvantaged. Of the total student population, 54.2 percent are White, 22.8 percent are African-American, and 17.8 percent are Hispanic. Its 2008-2009 food service expenditures totaled \$420,244, which is equivalent to \$363 per student, representing 2.5 percent of the district's total outflow.

Table 1 compares the academic performance levels of Boerne and Randolph Field, both of which have especially low rates of school lunch participation, and Harlandale, a school district with proportionally high rates of participation. Boerne and Randolph Field performed better than Harlandale on every academic success measure. Both school districts received considerably higher scores on all tests, have higher attendance rates, and have lower percentages of students deemed at-risk compared to Harlandale.

Table1. Comparison of Academic Achievement			
Academic Success Measure	Boerne	Harlandale	Randolph Field
TAKS Reading	97%	87%	98%
TAKS Math	93%	70%	93%
TAKS Writing	94%	92%	97%
TAKS Science	93%	66%	92%
TAKS Soc. Studies	99%	92%	97%
TAKS All	89%	61%	90%
TAKS Pass Rate	97%	83%	99%
TSI English	74%	52%	83%
TSI Math	84%	41%	68%
Attendance	96%	95%	97%
At-Risk	23%	64%	22.20%

Table 2 shows the correlation between the percentage of students considered economically disadvantaged (representing the percentage of students eating the school's lunch) and each academic performance measure. All relationships are statistically significant at the $p < 0.01$ level.

Table 2. The Statistical Relationship between Economic Disadvantage and Academic Performance	
Dependent Variable	r value
TAKS Reading	-0.907**
TAKS Math	-0.925**
TAKS Writing	-0.673**
TAKS Science	-0.932**
TAKS Soc. Studies	-0.824**
TAKS All	-0.929**
TAKS Pass	-0.903**
TSI English	-0.818**
TSI Math	-0.898**
Attendance	-0.889**
At-Risk	0.939**

* = $p < 0.05$

** = $p < 0.01$

Figure 3 shows bivariate analyses of the relationships between the percent of students who are economically disadvantaged and several academic performance variables. The following patterns can be observed: As the percentage of economically disadvantaged students increases, the percent of at-risk students also increases. As the percent of economically disadvantaged students increases, the attendance rate decreases. As the percent of economically disadvantaged students increases, the overall TAKS scores decrease. Finally, as the percent of economically disadvantaged students increases, the percent of students achieving passing TAKS scores decreases.

Figure 3. Bivariate Relationship between % Economically Disadvantaged and Academic Performance

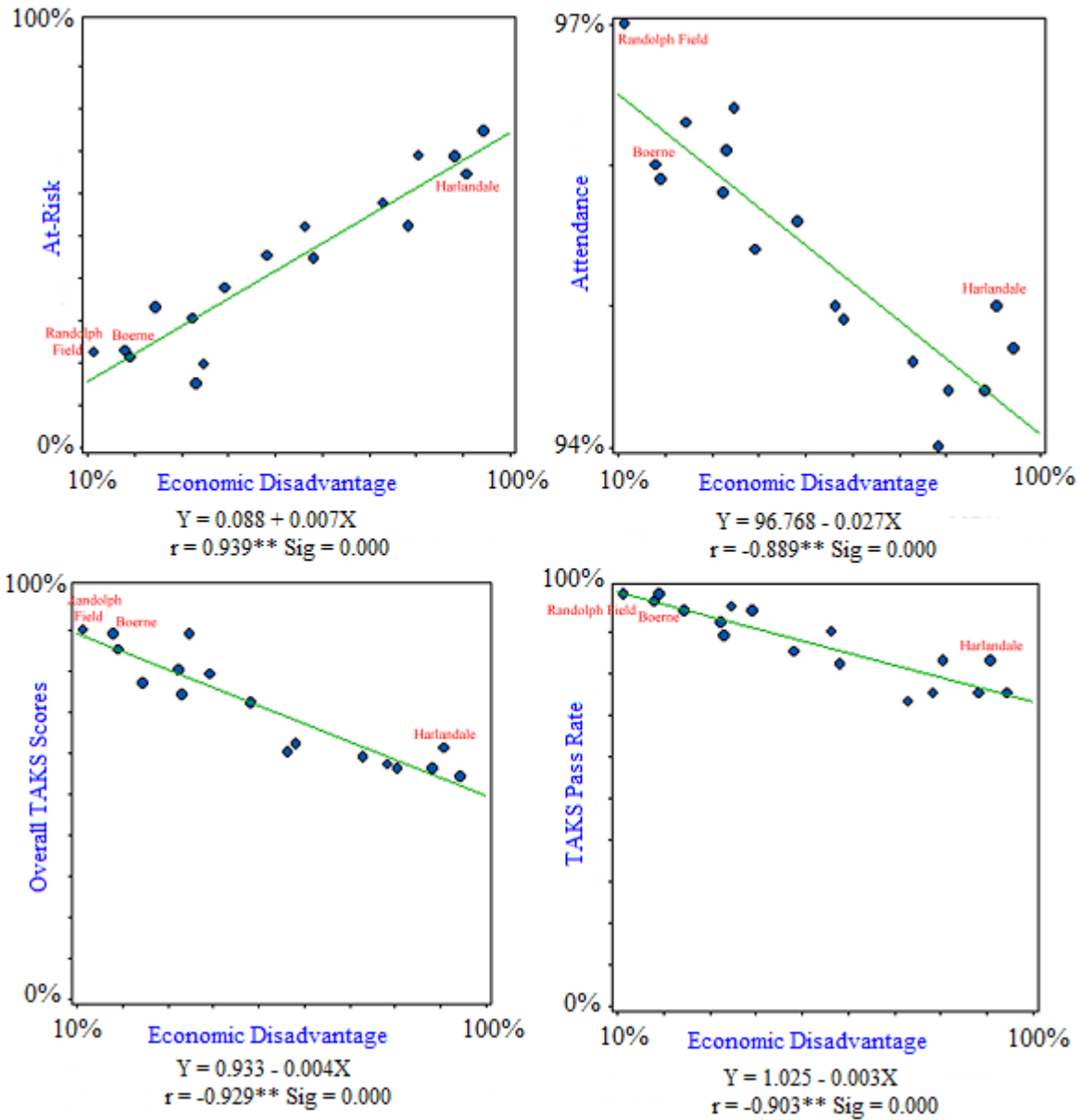


Figure 4 illustrates the relationship between economic disadvantage and the food service expenditures per student. It is clear that as the percent of economically disadvantaged students increases, the greater the per student expenditures on food services.

Figure 4. Bivariate Relationship between % Economically Disadvantaged and Food Service Expenditures per Student.

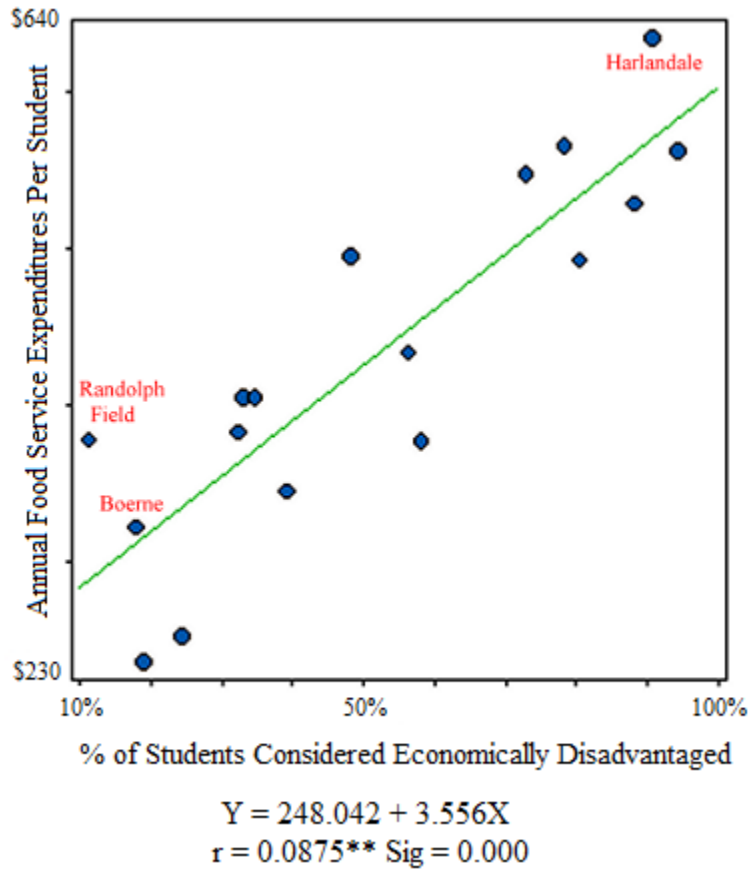
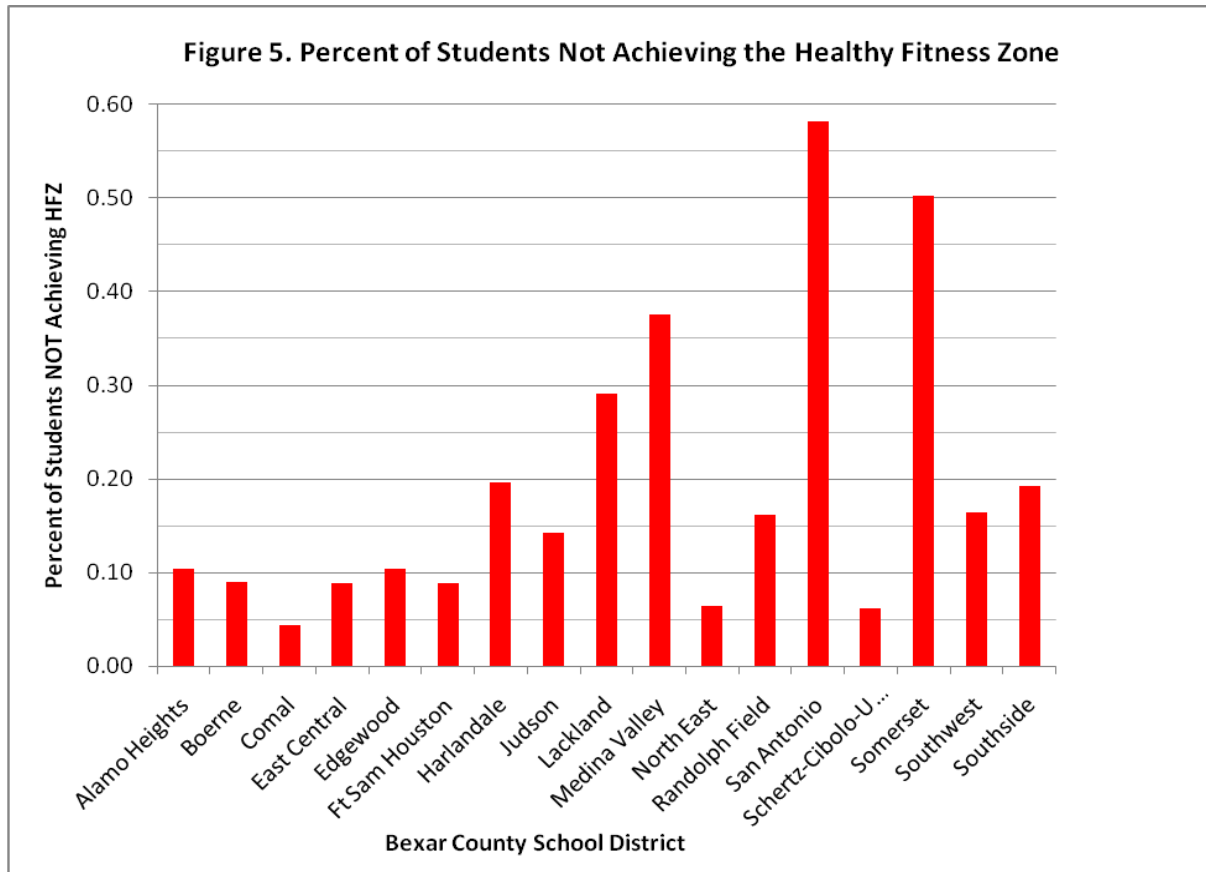


Figure 5 demonstrates the percent of students not achieving the Healthy Fitness Zone (HFZ) standard—in other words, students who are considered physically unfit—for each Bexar County school district. Among the three school districts of this research’s focus, Harlandale has the highest percent of students unable to achieve the HFZ standard. The figure indicates that 0.20% of Harlandale ISD students did not meet requirements while only 0.09% of Boerne students and 0.16% of Randolph Field students did not meet requirements.



The following graphs demonstrate the affect of food service expenditures on several academic performance measures. Figure 6 illustrates the relationship between annual food service expenditures per student and percent of students not achieving the Healthy Fitness Zone standard. As annual food expenditures per student increases, the percent of students unable to achieve the HFZ standard also increases. The regression line equation is: $Y = -.129 + .001X$. The correlation coefficient is .534, indicating a moderately strong positive relationship between the variables. The multiple coefficient of determination (R^2) is .285. Thus, 28.5 percent of the variation in the percent of students unable to achieve the HFZ standard is explained by annual food service expenditures per student. This relationship is statistically significant at the $p < 0.05$ level. The outliers are color-coded in red: San Antonio, Somerset, and Edgewood Independent School Districts. The three school districts of particular interest are labeled in blue.

Figure 6. Relationship between Food Service Expenditures and Healthy Fitness Zone Achievement

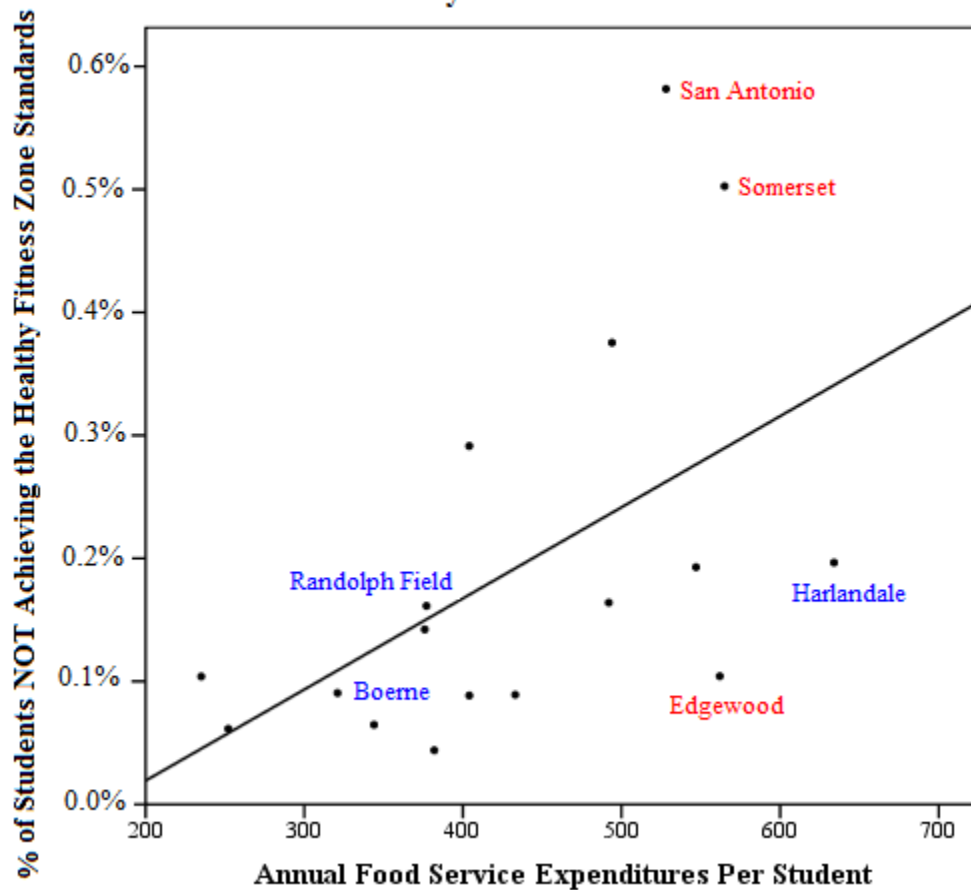


Figure 7 demonstrates the relationship between annual food service expenditures per student and attendance rates within the school districts. As food service expenditures increase, attendance rates decrease. The equation of the regression line is: $Y = .976 - (5.071E^{-5})X$. According to bivariate regression analysis, the correlation coefficient is .684, indicating a strong positive relationship between the variables. In addition, 47 percent of the variance in attendance rate is accounted for by annual food service expenditures per student. This is statistically significant at the $p < 0.01$ level.

Figure 7. Relationship between Annual Food Service Expenditures and Attendance Rate

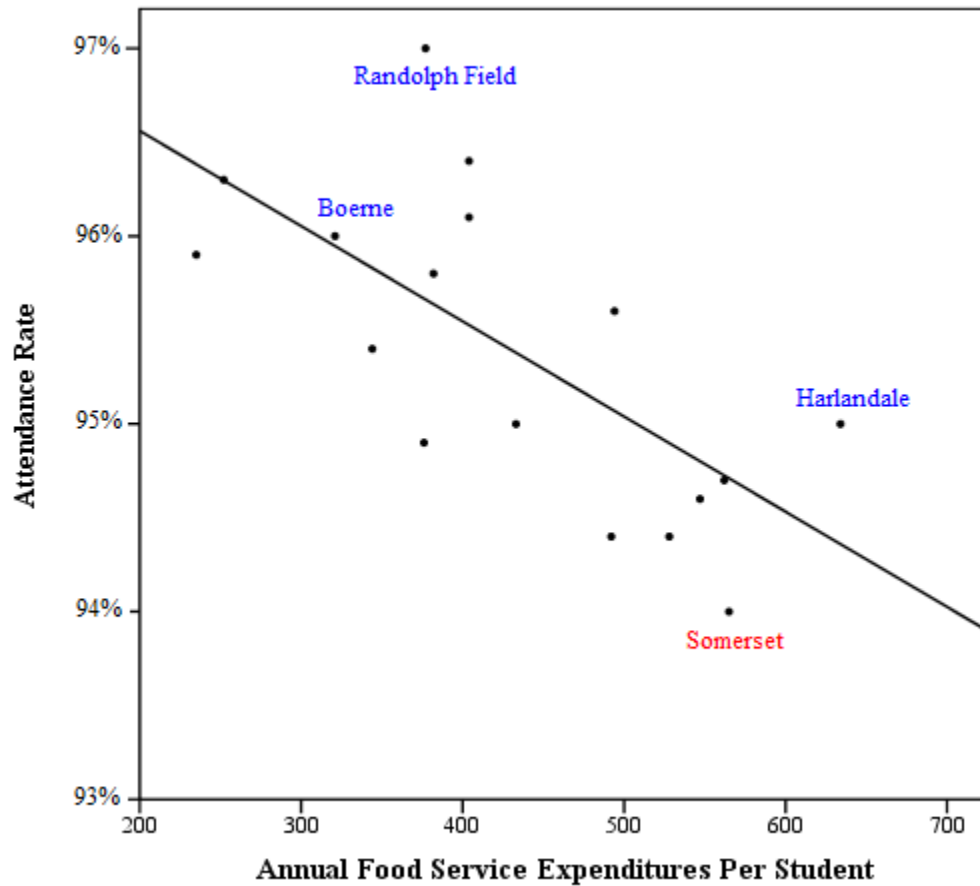


Figure 8 depicts the relationship between annual food service expenditures per student and the percent of students considered at-risk: As food service expenditures per student increases, the percent of students considered at-risk also increases. The equation for the regression line is $Y = -.145 + .001X$. The correlation coefficient is .772, revealing a very strong positive relationship between the variables. Furthermore, 59.6 percent of the variation in percent of students considered at-risk can be explained by annual food service expenditures per student. This is statistically significant at the $p < .001$ level.

Figure 9. Relationship between Food Service Expenditures and TAKS Scores

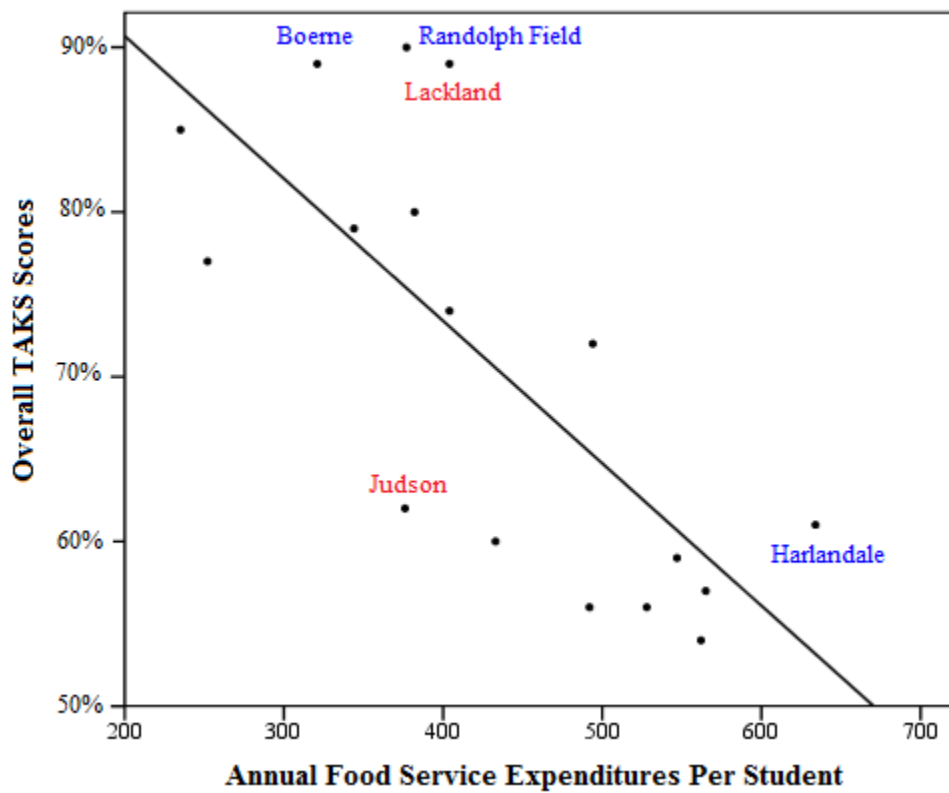


Figure 6 illustrated a positive relationship between annual food service expenditures per student and percent of students not achieving the Healthy Fitness Zone standard. As food service expenditures increased, the percent of students unable to achieve the HFZ standard also increased. Figure 10 demonstrates the relationship between HFZ achievement and TAKS pass rates among the school districts: As the percent of a school district's students unable to achieve the HFZ standard increases, the district's TAKS pass rate decreases. The equation for the regression line is: $Y = .931 - .307X$. The correlation coefficient is .533, revealing a moderately strong, positive relationship between the variables. In addition, 28.5% of the variation in TAKS pass rates among the school districts can be explained by HFZ achievement. This data is statistically significant at the $p < 0.05$ level.

Figure 10. Relationship between Healthy Fitness Zone Achievement and TAKS Pass Rates

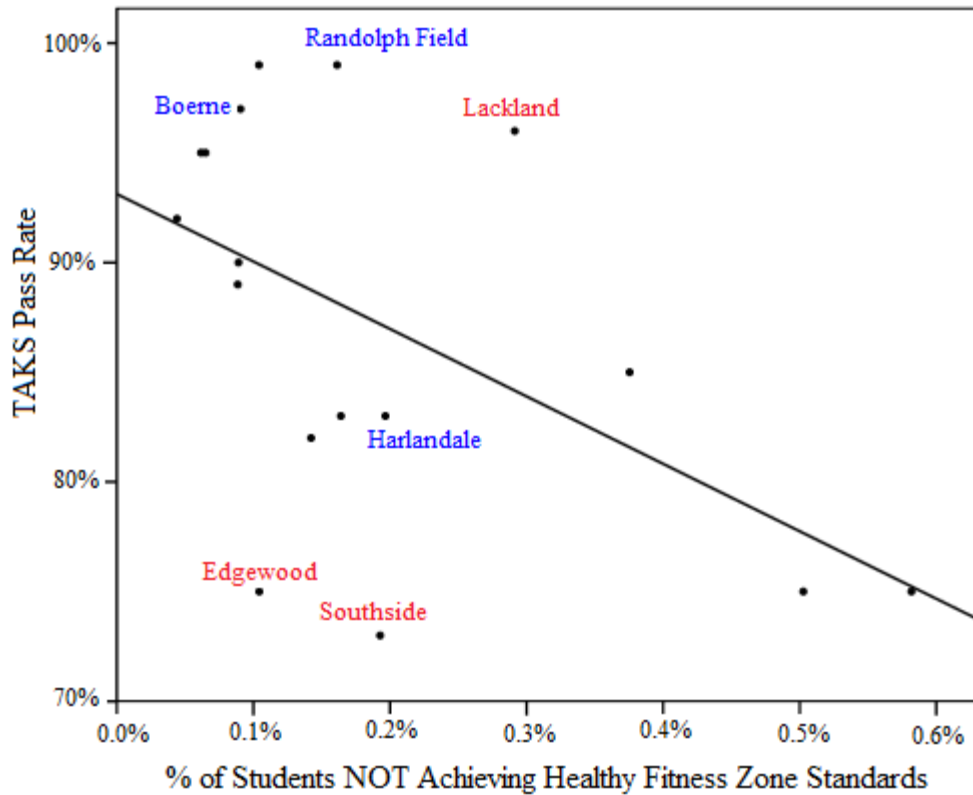


Table 3 shows the relationship between the independent variables (percent of students unable to achieve the Healthy Fitness Zone standard, percent of students who are economically disadvantaged, annual food services expenditures per student) and Texas Assessment of Knowledge and Skills (TAKS) pass rates. The multiple R-squared value indicates that the independent variables explain 83.4 percent of the variation in TAKS pass rates. This coefficient of determination is statistically significant at the $p < 0.01$ level. According to the multiple regression, the percent of students considered economically disadvantaged has the largest affect on TAKS pass rate.

Table 3. Multiple Regression for TAKS Pass Rate

Independent Variables	Beta
% Unable to Achieve HFZ Standard	-0.137*
% Economically Disadvantaged	-0.777**
Food Services Expenditures Per Student	-0.071*
Multiple R-Squared	0.834**

* = $p < 0.05$

** = $p < 0.01$

Nationally, between 16 and 33 percent of American children and adolescents are estimated to be obese (American Academy 2008) and recent surveys have ranked San Antonio as the third most obese city in America (Ruiz 2007). In spite of widely available information on the obesity problem, local school administrators seemed to have little accurate information available and minimized the problem. When asked, “Approximately what percent of students in your school district are obese?” the Child Nutrition Director at Randolph Field ISD estimated “Somewhere around ten percent,” as did the director from Boerne ISD. Both could offer only vague estimates about obesity levels in the populations they serve, indicating they have given little attention to the issue. In contrast, the Food Service Director at Harlandale ISD responded, “Our students recently completed the Fitnessgram but we have found that this data can be manipulated and is inaccurate. Our data indicated that almost 98% of our students completed their fitness goals, which is ridiculous. We know our kids... We have a high percentage of obesity in our district. Our obesity rates are *very high*. These kids are not at a normal level. The Fitnessgram was supposed to be something that could provide us with good information but it didn’t. The data is worthless.”

Interviewees were asked for their professional opinions on how the nutritional content of their school meals impacts students’ academic performance. The Food Service Director from

Randolph Field ISD explained that she does not spend much time thinking about this. She stated, “I want to make sure the kids are fed a good meal that is aesthetically pleasing. I try to offer the kids food they enjoy because if you don’t offer what they want they are not going to eat it. I think we do a good job here.” Later in the interview she declared, “For a meal to be reimbursed the kids must take the entrée as I have defined it. When the student walks away from the register I don’t care what they do with the food...I just want to get that money from the government.”

The Food Service Director from Boerne ISD believes there is a strong relationship between the nutritional content of school lunches and educational achievement. She stated, “Yes, I think food has a direct impact on academic performance. Children eating meals high in sugar can’t perform. Sugar not only causes hyperactivity and obesity but it causes a high and then an extreme low.” The Food Service Director from Harlandale ISD agrees. She responded, “There is a direct relationship. Eight years ago we started serving breakfast in the classroom. The reason for this was a push for better academic performance and higher test scores. For our demographic, the meals that these children eat are at school. And sometimes that’s all they eat all day. Academically speaking, we are aware that the only way for them to learn is to eat. It’s to get nutrition...There is no doubt that you need to ingest good nutrition to think. Many of our students were coming to school hungry. And many of these kids eat lunch at school and do not eat again until breakfast. So does the nutritional content of our meals impact academic performance? Yes- I believe so! This district is very in tune with this issue. They know that nutrition is important and they support it as best we can. We have a huge after-school program where we feed snacks and we provide free evening meals for the elementary level schools. It is that big of a push. The district wants better test scores and if we are even going to attempt to

obtain higher scores these kids need to eat nutritionally. You give them candy and they get a high and then a low...Trying to get a kid to do something when their stomach is growling is impossible. My children can't do anything hungry and I can't function when I am hungry. So how can you expect a child to? It's important to give them everything we can- and we give it nutritionally...We give them what they need to be able to think and do their work.”

Interviewees were asked to describe a typical meal served in their district. Randolph Field ISD offers an entrée, a fruit, two vegetables, milk, and a dessert each day. Salad with ranch dressing is offered every day while fresh fruit is only offered once a week. Popular entrees include chicken nuggets, pizza, cheeseburgers, twice-baked chicken, and chicken cordon blue. Desserts are typically cookies, sherbet/ice cream, or fruit. In addition to their meal options, the school district has a snack bar that sells items like pretzels, egg rolls, ice-cream, chips, and granola bars. Randolph Field also serves breakfast. The Food Service Director described the breakfast options, stating, “I typically do something sweet like cinnamon rolls on Mondays. On Tuesdays I serve biscuits and sausage or chicken patties. On Wednesdays I serve breakfast pizza with cheese and sausage. They love it - they'll buy two and three slices extra. On Thursdays I serve breakfast tacos and on Fridays I serve French toast and sausage. In addition, I always offer cereal, toast, and Nutrigrain bars.”

On the day of the interview, Boerne ISD was serving a lunch of chicken nuggets, mashed potatoes with gravy, green beans, a wheat roll, fresh fruit, and milk or juice. The district offers two choices of fresh fruit and fresh vegetables every day. The vegetables are typically frozen and then steamed, as this is healthier than canned vegetables. According to the Food Service Director, everything is low-fat, low-sodium, and whole-grain. She stated, “I use turkey hot dogs and whole grain buns. I use ground sirloin when I serve beef because it's much lower in

fat...Our spaghetti has a low-fat meat sauce and low-fat ground beef. Our cheeseburgers have no Trans fats and we use wheat buns.” The district uses the slogan “GO, SLOW, WHOA” from the Coordinated Approach to Children’s Health Program (CATCH). GO foods are lowest in fat and can be eaten “almost anytime.” SLOW foods are higher in fat and should only be eaten a few times each week. WHOA foods are highest in fat and should only be eaten on occasion. The director emphasized, “I try not to serve any WHOA foods!”

Harlandale serves breakfast and lunch free of charge to all students. Ninety percent of the student population is economically disadvantaged and, therefore, qualifies for free or reduced meals. The small portion of students that do not qualify are still fed for free, as the school district finds it easier not to screen out the ten percent that does not qualify. This results in lost revenue. Despite these circumstances, the district strives to provide nutritious meals. The Food Service Director explained, “We use all low-fat cheese and we do not use any oil. We don’t fry anything. Our enchiladas are healthy. We make them here – we steam the tortillas, use no oil, we use low-fat cheese. Parents will ask how serving pizza can be healthy. Well, we use low-fat pepperoni, low-fat cheese, and a whole-grain crust. And we only serve the children one slice. We serve an item called Turkey a la King that is vegetables and turkey served in a gravy sauce over rice. We use turkey chili in our Corn Chip Pie and our hot dogs and corn dogs are made from turkey ... We serve the best foods we possibly can with the money that we have.” The district offers fresh fruits and fresh vegetables every day and the director explained that their students eat a lot of them. She stated, “I want them to eat fruits and vegetables at school because they aren’t getting any at home. We usually provide four different types of fruits and vegetables every day – some are cooked and some are fresh.” In addition, the district offers a baked potato plate, a chef’s salad plate, and several sandwich options each day.

Breakfast is served in the classroom at Harlandale schools to ensure that each child has the opportunity to eat breakfast. They serve items like whole-grain biscuits, turkey sausage, or a morning roll. She described the morning roll stating, “Our morning roll is similar to a sweet roll because you want it to be visibly appealing to the kids but it is all whole-grain...I could buy a honey bun and serve it for breakfast but I’m not going to do that. The honey bun would be cheaper than what I am paying for the morning roll and it would probably even comply with nutrition policy – believe it or not – but I’m still not going to do that.” Teaching these children better choices is extremely important to the director, especially because she serves students from impoverished families. She declared, “It’s hard because they are eating fast food and crud at home.”

Interviewees were asked how strictly they follow federal nutritional guidelines. The Child Nutrition Director of Randolph Field ISD claimed that she tries to be as compliant as possible. The school district uses an online nutrient calculator to ensure that all items served meet federal guidelines. In order to demonstrate this process, she entered the nutrition facts of a bag of popcorn into the calculator. Unfortunately, results indicated that the bag of popcorn was too high in fat. She seemed startled and embarrassed, stating “Wait, the fat content is too high...I thought it was okay but I’m really out of compliance.” I asked her if she will stop serving it immediately and she said she will continue to serve it this year but stop next year. Coincidentally, the school district will be audited next year.

When asked how strictly the Boerne ISD follows federal guidelines the Food Service Director answered, “We follow them to the max.” She ensures that all items meet federal guidelines *before* serving them to students. She claimed that Texas guidelines are stricter than any other state, proudly noting “There are some recipes put out by the USDA that do not comply

with nutritional standards in Texas.” The Food Service Director at Harlandale ISD held a similar outlook. She stated, “Auditors come every five years but I choose to be as strict as I can for the entire time. That’s just me personally, not everyone does that... We don’t put anything on our menu that does not comply with federal guidelines. Unfortunately, loopholes are everywhere and you can choose to do more or you can choose to do the bare minimum... For example, you can sell Hershey bars with peanuts. It is okay since it has peanuts. So you can sell Snickers – but do I choose to do that? No. But some do because they can and they want to make money off of it. I am a dietician so I have a nutrition background and I personally *cannot* sell a Snickers bar. I’m trying to provide the best environment here because when they go home they are free to go to McDonalds.”

Interviewees were asked if funding has decreased in recent years as a result of the economic downturn. Funding has remained stable for the food service department at Randolph Field, mainly due to its status as a military school. All parents have secure jobs so the number of students qualifying for free and reduced meals has not changed. Boerne has not experienced a decline in funding either. The director explained, “I don’t have many reimbursed meals here so I get most of my money from paid meals. And our sales haven’t gone down, actually they have gone up. Our meals cost \$3.00 in primary schools and \$2.25 in secondary schools. We have some of the highest prices in the state of Texas. So the economic downturn hasn’t really affected us.”

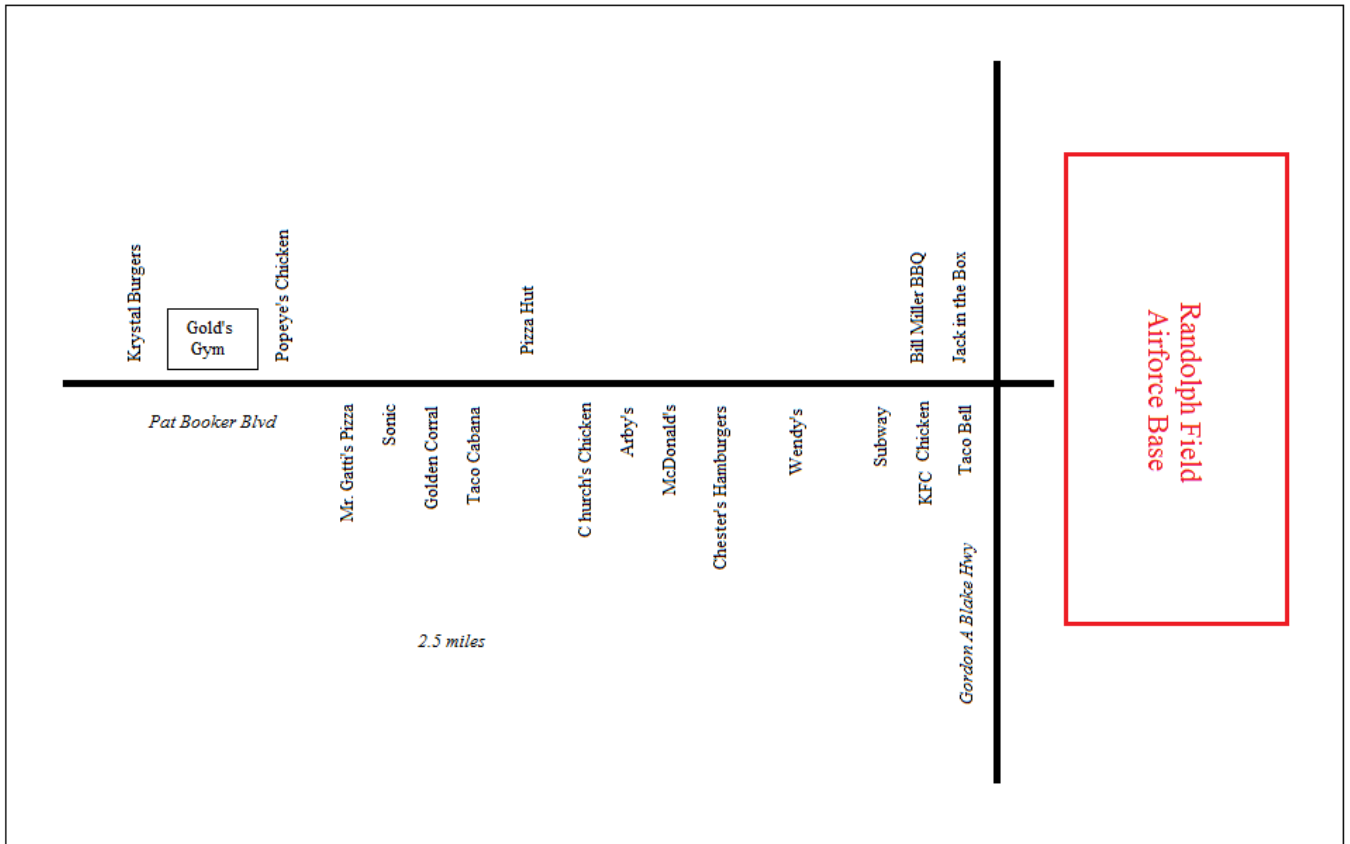
On the other hand, Harlandale ISD, a school district catering to economically disadvantaged students, has experienced difficulties as a result of the economic downturn. The Food Service Director explained, “The funding has not decreased. Each year we receive a three percent increase on reimbursement for each meal. It’s been that way for many years. The

problem is that the price of food has increased ten to fifteen percent. So our funding has not matched the increase in prices. It has been tough, but if you utilize your commodity dollars the way you are supposed to and you take the time to research you can find products. For example, we have a huge milk budget and we were serving milk in the plastic bottles which is more expensive. We had to switch back to the paper cartons and we saved \$400,000. You can make changes that enable you to still provide healthy foods. Our food may not be organic but it's healthy. And, of course, our clientele isn't asking for organic food. Maybe they are serving organic products in the Alamo Heights ISD, but they charge out the wazoo.”

Fast-food industries, whose outlets encroach on school properties, challenge the good intentions of many school district nutritionists. To investigate whether such encroachments are more common in poor than wealthy school districts, on-site observations were made of the areas surrounding high schools in the Randolph Field, Harlandale, and Boerne Independent School Districts.

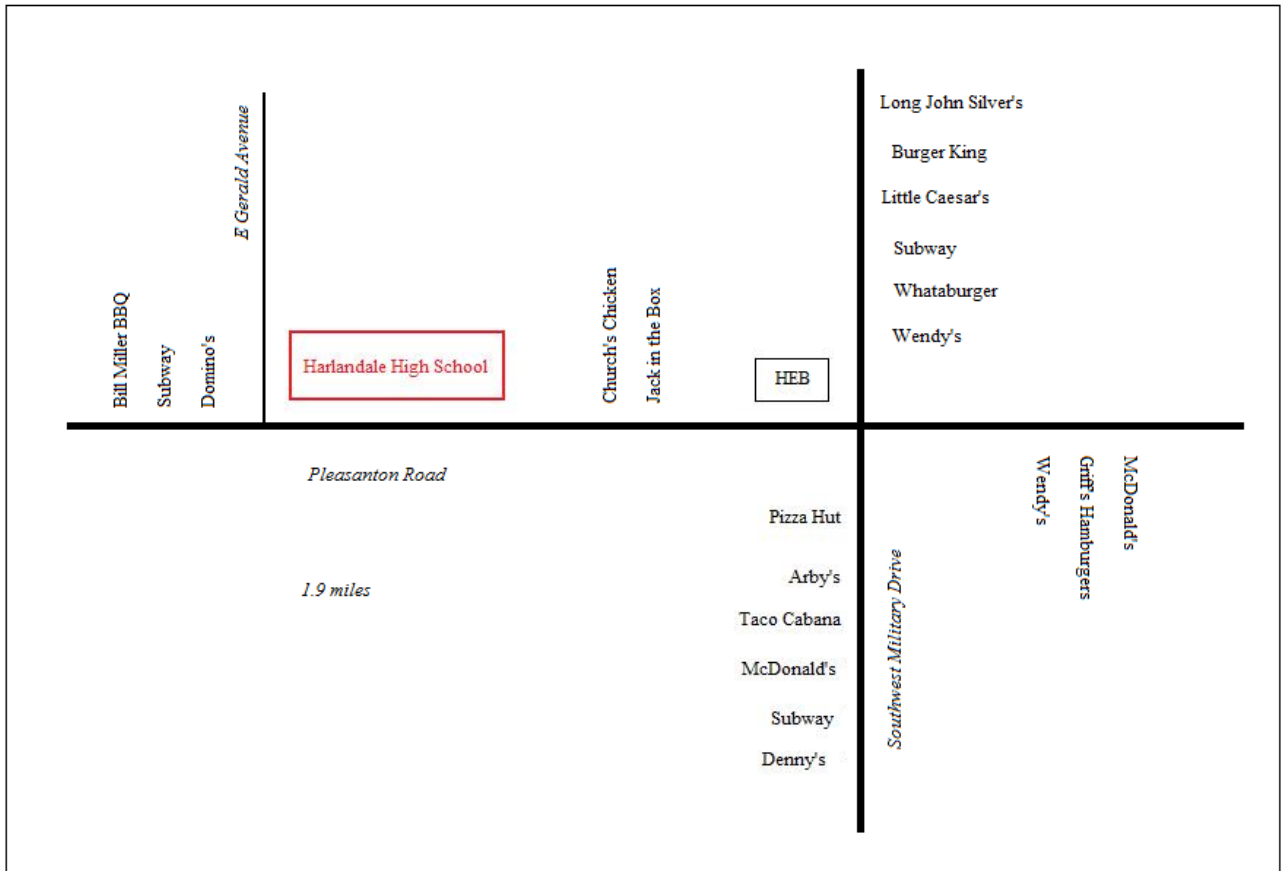
The first school visited was Randolph High School, the sole high school in the Randolph Field ISD. The school is located on the Air Force Base which is entirely enclosed by fences. Pat Booker Boulevard is a 2.5 mile street connection between I-35 and the Air Force Base. Unhealthy food options and fast-food restaurants line both sides of the street: Krystal Burgers, Popeye's Chicken and Biscuits, Mr. Gatti's Pizza, Sonic, Golden Corral, Taco Cabana, Pizza Hut, McDonald's, Arby's, Church's Chicken, Chester's Hamburgers, and Wendy's. At the entrance to the Air Force Base there is a four-way traffic intersection, offering the eating options of a Subway, Bill Miller BBQ, Jack in the Box, Taco Bell, and KFC Chicken. Figure 11 illustrates this 2.5 mile stretch of high-fat eating establishments.

Figure 11. Fast-Food Establishments Surrounding Randolph High School



Harlandale High School is located in the midst of an overwhelming number of unhealthy food options, some worse than others. Within a two-mile radius of the school are the following: Bill Miller BBQ, Subway, Domino's Pizza, Church's Chicken, Jack in the Box, Wendy's, Griff's Hamburgers, two McDonald's, Wendy's, Whataburger, Subway, Little Caesar's, Burger King, Long John Silver's, Pizza Hut, Arby's, and Taco Cabana. The school is sandwiched between Domino's Pizza and Church's Chicken. Figure 12 depicts these inundated circumstances.

Figure 12. Fast-Food Establishments Surrounding Harlandale High School



The circumambient area of Samuel V Champion High School, an institution of the Boerne Independent School District, is completely different. There are no fast-food establishments within a two-mile radius of the school. Rather, it is located in a suburban region close to Boerne City Park offering five soccer fields, picnic areas, Boerne city swimming pool, eight tennis courts, a sand volleyball court, walking trails, an arboretum, and Cibolo Nature Center.

This study of fast-food ecology shows a disturbing circumstance: the exemplary poor school district is surrounded by fast-food restaurants while the wealthy school district is isolated from such unhealthy temptations.

DISCUSSION

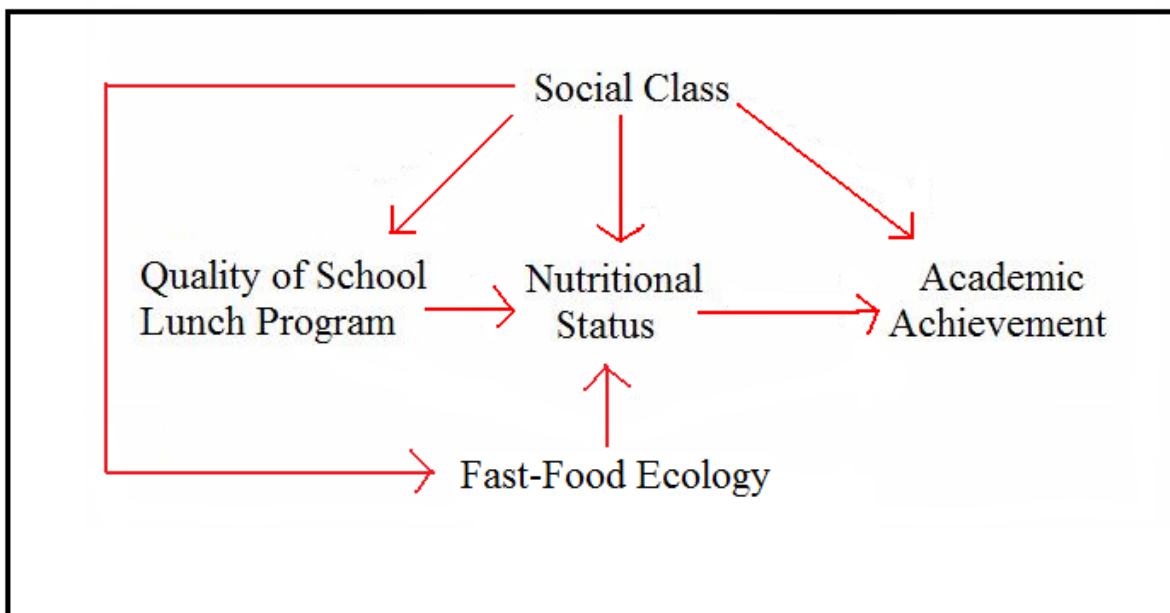
The present study contributes to the growing evidence of significant connections between school meal programs, nutritional status, and students' academic achievement. It is widely acknowledged that a relationship exists between social class and academic performance. Looking further, this study reveals underlying aspects of social class experience that have an effect on academic success. These include school meal programs, physical fitness, and fast-food ecology.

Food service expenditures are found to correlate with academic performance, even when controlling for economic disadvantage and physical fitness. As annual food expenditures per student increases, attendance rates decrease, the percent of students considered at-risk increases, and overall TAKS scores decrease. Analysis also revealed a statistically significant relationship between physical fitness and academic performance. Specifically, as the percent of a school district's students unable to achieve the HFZ standard increases, the district's TAKS pass rate decreases. So, in general, schools serving lunch to a large percentage of students have more physically unfit students and are more likely to perform worse on academic measures compared to schools serving lunch to a small percentage of students. These results suggest that the lunches served in many schools fail to provide students with the nutrition necessary for optimal learning and productive behavior. In some cases, the fatty and sugary foods served at lunch may even directly obstruct academic success.

Figure 13 diagrams the theory behind this research study, with the red arrows showing the actual relationships studied. The figure illustrates the variables that have an influence on the academic achievement of children in various school districts. The proportion of economically disadvantaged classmates, the quality of food served in a school's lunch program, the school's

fast-food ecology, and the nutritional status of students (which includes obesity status and physical fitness) all have an impact on a school district's educational success.

Figure 13. Variables that have an Influence on Academic Achievement



Interviews and quantitative data analysis provided extensive information about the three school districts of interest. Harlandale has high involvement in its school lunch program and has a higher percentage of students unable to achieve the Healthy Fitness Zone standard than most school districts. The Food Service Coordinator acknowledged that the district has very high rates of obesity. In comparison, Randolph Field and Boerne have low participation in their school lunch programs and almost all of their students surpassed the Healthy Fitness Zone standard. Administrators spoke of very low obesity rates within the districts.

Taking all of this information into account, it is important to recognize that Boerne and Randolph Field performed better than Harlandale on every academic success measure. Both school districts received considerably higher scores on all tests, have higher attendance rates, and

have lower percentages of students deemed at-risk compared to Harlandale. Thus, the current study reveals an association between school lunch programs, obesity, and academic performance. Harlandale, with exceptionally high rates of obesity, has lower academic success than Boerne and Randolph Field. Why is this so? Are obese students less successful academically because they lack the courage and initiative to participate in classroom activities? Do medical problems associated with overweight or obesity make learning and concentration difficult? Or is a low sense of self-worth due to bullying and teasing responsible for lower levels of aspiration and, therefore, less effort at school? Further research is necessary in order to answer these questions.

This study examined aggregated data demonstrating statistically significant connections between school district-level measures of nutrition, physical fitness, and academic success. To truly establish the bearing of nutrition on academic performance, one must analyze individual-level data, which would pose a host of ethical and privacy issues. And, in order to accurately establish whether school food programs have a direct effect on educational achievement, the researcher must control for home environments (i.e., availability of books, parental guidance), lifestyle, intellectual motivation, quality of instruction, career role models, and the like.

For this study, taking an aggregated data approach invited ecological investigations of the concentrations of fast-food restaurants within easy walking distance of schools, particularly low-income schools. The ever-present temptation of such food undoubtedly contributes to the nation's obesity epidemic. These circumstances raise the question of whether fast-food establishments intentionally locate their restaurants close to schools, making them easily accessible to young people. Previous research indicates that on an average day approximately one-third of school-aged children eat fast food. Furthermore, children consume more calories, fats, and sugars, and fewer fruits and vegetables on days when they eat fast-food (MSNBC

2005). Harlandale High School, accommodating a disproportionately high percentage of economically-disadvantaged students, is surrounded by fast-food restaurants. Within a two-and-a-half mile radius of the educational institution there are over eighteen fast-food options, bombarding these students with low-quality food choices. Additionally, the high school sits directly between two fast-food restaurants. The road that leads to the Air Force Base, where Randolph Field High School is located, is lined by fast-food restaurants on both sides. Fortunately, the high school is confined within the gated base and, therefore, is somewhat distanced from these unhealthy temptations. In stark contrast to Harlandale and Randolph Field, there are no fast-food restaurants within a two mile radius of Samuel V Champion High School which serves the middle and upper-class students of Boerne ISD.

The geographic location of fast-food establishments begs the question of whether fast-food companies target specific socioeconomic classes. Are students from lower-class families more likely than their middle- and upper-class counterparts to indulge in fast-food when school is over? Poor people must find ways to eat cheaply and fast-food is inexpensive. Fast-food companies take advantage of poor people's financial situations with come-ons like the McDonald's Dollar Menu. The environmental susceptibility of low-income students to fast-food establishments is a clear form of structural violence. Students are bombarded by unhealthy food options at a very young age while their upper-class counterparts are more easily able to steer clear of such choices. In order to combat increasing obesity rates among children, it is essential that schools implement zoning requirements that limit the proximity of fast food restaurants to schools.

Interviews with food service directors and observations made in school cafeterias unveiled major differences between the three districts in the types of food served. Randolph

Field, with the lowest percent of economically disadvantaged students, offers high-fat entrees, sugary desserts, and a snack bar chock-full of unhealthy, but profitable, *a la carte* items. The Food Service Director admitted that their prices are among the highest in the state of Texas. In spite of its high priced meals, the district offers fresh fruit only once a week. Randolph Field has the monetary means to serve fresh and healthy items on a daily basis yet the district does not make efforts to do so. In contrast, Boerne takes advantage of its affluent status and serves an abundance of healthy items. The district offers two choices of fresh fruit and fresh vegetables every day. Additionally, everything served is low-fat, low-sodium, and whole-grain.

Despite Harlandale's low-income status, the district strives to provide nutritious meals. According to its director, the district serves the best food possible with the modest funds available. For example, when pizza is served the district uses low-fat pepperoni, low-fat cheese, and a whole-grain crust. Additionally, the district manages to offer fresh fruits and fresh vegetables every day. Harlandale's food service director stated, "Our food may not be organic but it's healthy. And, of course, our clientele isn't asking for organic food. Maybe they are serving organic products in the Alamo Heights ISD, but they charge out the wazoo."

Interviewees were asked to express their opinions on the relationship between the nutritional value of school lunches and academic performance. The Food Service Directors from Boerne and Harlandale ISD both believe there is a strong correlation. On the contrary, the director from Randolph Field ISD made it clear that she does not spend much time thinking about this relationship, as her priority is to "get that money from the government." This difference in opinion is disconcerting. It is apparent that some school districts lack an authority figure who acknowledges the importance of a nutritious lunch and whose objective is to serve

healthy meals that promote educational success. If the primary goal of a district's lunch program is to make a profit, the food served will likely not be of optimum quality.

Important conclusions may be drawn from these observations. Stated simply, some school districts serve healthy meals and others do not. In general, school districts that cater to the needs of middle- and upper-class children serve higher quality lunches than districts attended by children from lower-class families. Boerne ISD has the funds to provide a plethora of healthy options that are of the utmost quality and they use this money appropriately. However, results reveal that not all affluent school districts endeavor to provide healthy lunches. Randolph Field provides a conspicuous example. It is apparent that the Food Service Director of Randolph Field does not consistently follow federal nutritional guidelines, as the meal served on the day of the interview did not meet federal criteria. School districts like Randolph Field seem to take advantage of the five-year grace period between audits.

It is also important to note that not all underprivileged school districts serve unhealthy lunches. It is evident that Harlandale aspires to provide nutritious meals. While it is nearly impossible that their meals are of the same quality as meals served in their wealthy counterparts, the conscientious efforts of the school district are nonetheless admirable. Still, this inequality is socially unacceptable. Despite Harlandale's efforts to make the most of their substandard resource base, the district finds it necessary to engage in commercial contracts with vendors for additional sources of income. Items sold in vending machines are just another reason for the expanding size of school children's waistlines. And undermining its own efforts, Harlandale ISD finds its schools engulfed in a sea of fast-food restaurants.

Students that attend schools in districts like Harlandale ISD enter school at a disadvantage, as they come from impoverished families. This disadvantage is exacerbated by the

inferior characteristics of the schools they attend – in this case, the food served at lunch, the commercialism prevalent within their schools, and the fast-food ecology overwhelming their schools. How can a student eating a high-fat lunch in the cafeteria, drinking a sugary soda from the vending machine at school, and stopping at a fast-food restaurant for an after-school snack perform academically to their best of their ability? The student did not choose to be in this unhealthy environment; rather it is the result of the social class and culture he or she was born into. Furthermore, the student lacks the agency to control his or her school's food environment. This embodiment of conflict theory is socially unacceptable.

More research is necessary to tease out the role that socioeconomic status plays in the relationship between nutritional status and academic achievement. Although the Texas Education Agency defines students as “economically disadvantaged” if they receive free or reduced-price school lunches, it is undeniable that other factors associated with being economically-disadvantaged effect academic achievement—for example, cramped living conditions, unsafe neighborhoods, and lack of parental guidance. Thus, a more comprehensive study is necessary to isolate the impact of the nutritional quality of school lunches on academic performance.

CONCLUSION

After performing secondary research, conducting interviews, and seeing firsthand the lunches served in the local school cafeterias, I have devised a list of fairly simple ways to improve the quality of school lunches in Bexar County. These changes have the potential to improve the nutritional status of school children and, therefore, to improve their academic performance. First and foremost, fresh fruits and vegetables should be offered on a daily basis. A new study by the University of Michigan Cardiovascular Center indicates that only 16.3

percent of school-lunch eaters regularly eat fresh fruits or vegetables, compared with 91.2 percent of students who bring their own lunch (Gustafson 2010). It is important that students be offered fruits and vegetables at school so that they develop a taste for these healthy choices. Despite the district's economic situation, Harlandale ISD offers fresh fruits and vegetables every day. Boerne also offers fresh fruits and vegetables every day. Randolph Field does not.

Foods like hamburgers, cheeseburgers, pizza, tater tots, and French fries, which are commonly associated with school lunches, should be offered sparingly. Hamburgers and cheeseburgers are offered every day in Randolph Field schools, and French fries are offered three times a week in high schools, the maximum number of servings permitted by federal nutrition requirements. In contrast, hamburgers or cheeseburgers are only offered twice per month in Boerne schools, and the district has replaced tater tots and French fries with a baked potato option. This is a step in the right direction.

Sugary desserts should be replaced by healthier options, like fruit cups and low-fat yogurt. Additionally, it is not necessary to serve a dessert every day. In fact, it would be better to reserve sweet desserts for holidays and other special school days. This would reduce sugar intake and promote moderation. Boerne ISD has made efforts to serve fewer desserts. They typically serve a small dessert once a week, rotating between fruit salad, a reduced-fat, whole-grain cookie, pudding, or a reduced-fat ice cream cup. Most school districts offer a high-sugar dessert option every day.

Providing low-fat alternatives for condiments is another simple modification. Randolph Field offers a tossed salad on the lunch line every day; however only ranch dressing is available and this is high in fat and calories. When asked why ranch was the only dressing offered, the

Food Service Director plainly stated, “It’s easier.” This increases the calorie and fat content of the salads, and likely dissuades students who do not like ranch dressing from eating salad.

Lastly, school lunch program administrators should reduce the number of choices children have at lunch time. Many schools offer burgers, French fries, unhealthy snacks, and sugary treats alongside the daily lunch selections. Children are given the option of purchasing a candy bar and soda from the vending machine, or they can buy a 390 calorie soft pretzel *a la carte* and enjoy the six grams of fat that go along with it. Randolph Field schools have a snack bar that offers foods like pretzels, ice cream, chips, and candy. In general, when children are allowed to choose the components of their so-called lunch, they do not eat a balanced meal. Overall, children who learn to eat healthy foods and develop a taste for nutritious foods in their early years will make better food choices as adults.

APPENDIX

Interview #1
Randolph Field ISD
Child Nutrition Director

I started at Judson ISD.

I go to the elementary campus at least once a week. We only have the two campuses. There are only 3 schools but two campuses.

How does nutrition affect academic performance?

If you have breakfast it results in fewer tardies and absences and students concentrate better. Eating a healthy lunch allows students to concentrate better in their classes. Less than 20% of our school district qualifies for free/reduced school lunch.

Do you know what % of students eat the school lunch versus bringing their own?

We can check that when we get back to my office.

Does the elementary, middle, and high school have the same meal plans or are their two different ones?

They all follow nutrient standard. There is nutrient standard and traditional and we do nutrient standard meal pattern.

What is the difference?

Um, with nutrient standard you get reimbursed by the government for meals served during breakfast and lunch (and they even do reimbursable snack program but we do not do this). And you must have certain components on your tray. The computer keeps a tally of the students coming through and so the cashier is ultimately responsible. When that student walks away with that tray, that tray is considered reimbursable. The government will reimburse us. But it has to have certain components on the tray. So with nutrient standard you must have the entrée, however I define the entrée. If the student doesn't take an entrée I can't count that tray. So if I define it as chicken with the roll, they have to take both for it to be reimbursable. They have to also have two more items from the line. It could be a veggie and milk- so that's two more components making it a reimbursable tray. If they just have the entrée and the milk they are missing a component.

So the government is reimbursing you for having them have a complete meal with each nutritional item?

Yes. We get reviewed every five years. With nutrient standard you can really do anything you want- you can have a dessert, we do brownies or cookies or fruit. Most people do traditional where you don't have to take the entrée, you just have to have a minimum of 3 components on a tray...so it could be a combination of anything. And you have to have so many servings of grain, etc. You can't just have cookies as your dessert, it has to be something like fruit.

And then the Texas Nutrition Policy I think is trying to fight the obesity problem. So we can only have so many fats per week...um, so much fat per serving...um, certain serving sizes can't be

beyond, like less than an ounce for the chips. An item can only have so much sugar, like the Gatorade can only be a certain size and can only have so much sugar per serving.

And how strictly is this enforced?

You have to...well I guess you don't have to do anything but you get audited every five years. We get audited next year. We try to be as compliant as we can and I always feel like when the auditors come out they can tell if you are trying to not comply with what you are supposed to do. So you are supposed to comply with everything that they want you to do.

[We enter the elementary cafeteria]

What do we have today?

Mini corn dogs today and ham and cheese sandwiches. The main item or an alternate.

[Back in the car]

I always offer two veggies whether its corn and green beans or corn and salad. But I always have two veggie options. I usually have fruit for dessert. Sometimes we do cookies as their dessert and we will do ice cream sometimes. But for the most part they get fruit as their dessert. They get fresh fruit once a week. And same thing at the secondary campus. You get fresh fruit once a week. Most of the time if there is fruit for dessert I give like sherbet or ice cream. We do offer salad every day on the line at the secondary campus. Every day they can get fresh salad and we have two veggie options.

With a la carte items...how do those work? Can a person just buy an a la carte item or add it to their meal?

If they have money in their account they can buy it. You cannot charge a la carte items. We have a snack bar at the secondary campus so we sell chips and ice cream and I have a special every day like today is popcorn chicken which is just the popcorn chicken by itself. Now in the line they can get if they want just a salad they can do that. And then we'll just charge them a la carte for it.

And so what are the main responsibilities of your job?

I am responsible for the whole department and for my employees. Making sure that we are in compliance with regulations- federal and state. I do the yearly budget. I do the commodities- we get commodities from the government. We have to start working now for next year. The government gives us so much money, called pal dollars, so it's like a bank account. Every month I do a claim and the computer keeps a tally of the trays that were reimbursable. And I turn this in to the government at the beginning of each month. And they keep a record of it and I think it goes back three years and they decide how much pal dollars you can put toward your commodities, like meat, fruits, vegetables and things. They base your number of meals and they say you've got this many of students eating so we'll give you 10,000 dollars worth of money. So the commodities have a value to it. So then I can take that money and use it however I think I need to use it.

We have a program called Nutrikids- or Lunchbyte system. You must stay within the recommended daily allowance- like how much fat, saturated fat, so much vitamin A and B and calcium. You have to stay within those standards. So this program we use it to create the menu.

And the program will calculate for me the number of calories possible for that meal because it does a weighted value. Everything that I have offered for that day. It's just a lot of information.

And is following the Nutrikids system required or is that something you decided to do?

Um, I inherited this program when I came here from Judson and it has worked really well.

But is that a federal requirement?

There is a federal requirement that you have to meet certain standards as far as nutrients and we are nutrient standards so we are supposed to keep a data of the calories and the fats and all that stuff. And this program helps me to do that.

It's hard...

[We look at the Nutrikids system with today's meal...the fat content was too high]

So then what would you do?

I would need to adjust it. It could be the cheese...

And so this meal is above the total fat grams?

Yes, It's probably too...um...

And so for today did you just overlook that?

Yeah.

So I'm okay on my calories and I'm okay with the iron. It tells you...like total fat too high. Calories are low, iron is low...that's hard.

Do you normally plan the meal and then put it in? Or do you sometimes look after?

It's probably this grilled ham and cheese.

It's very challenging. Let's look at a whole week's worth...

With the federal guidelines that you must follow is there a program that they recommend you using? Or is that just on your own? (27 min)

We use the Nutrikids system for this.

And will you have to show that to anyone?

Yes, when they come in to audit next year they will do a school m__ initiative to make sure you are following the guidelines. They give you a little bit of leeway.

So what if they came in today and saw that the fat content was over?

They would ask me to correct it. And maybe ask how I would fix it. Because we have a big influence on these kids at school and they want us to offer the healthy things and have the healthy choices.

What kinds of things do you serve for breakfast?

Let's see... I typically do something sweet like cinnamon rolls on Mondays. On Tuesdays I serve biscuits and sausage or chicken patties. On Wednesdays I serve breakfast pizza with cheese and sausage. They love it - they'll buy two and three slices extra. On Thursdays I serve breakfast

tacos and on Fridays I serve French toast and sausage. In addition, I always offer cereal, toast, and Nutrigrain bars.

That sounds like a variety.

I think so. I think the challenge is finding different menu items and things to offer that the kids will take.

Right, you have to balance nutrition and what they like.

Yes, it can be a challenge.

Do you know how many people eat breakfast here?

On the average we had 73 students eat breakfast at the elementary campus and 344 average eating lunch.

Here we had 26 students eating breakfast and ___ ate lunch on the secondary campus 6th through 12th grade.

21 days of October...and we served...[I have numbers written down]

How does your meal plan differ from other school districts?

Traditional meal pattern versus nutrient standard...different guidelines and ways of being reimbursed. I think most districts go with traditional because that's what they are used to. It's always hard to change.

Is it hard to control each school's actions?

Sometimes. You know I can ask them to do something and they she might do what she wants to do anyway. She is usually really good at telling me.

You have to set standards and expect that they will do it when you're not there. They are gonna do what they want when you're not there. I mean I hate to say it.

We have to keep a record of how much we prepare and how much we serve so for instance if we did 100 servings of mini corn dogs...

Might you notice that no kids were eating a particular dish?

Oh yes.

What are favorite things?

Chicken nuggets, pizza, hamburger and cheese burgers, chicken patties, twice baked chicken, chicken cordon blue, egg rolls from the snack bar, chef salads that we make every day

What is your take on how nutritional content affects academic achievement and general wellbeing? Does your job lead to you to think a lot about this?

No, not really. I want to make sure the kids are fed a good meal that is aesthetically pleasing. I try to offer the kids food they enjoy because if you don't offer what they want they are not going to eat it. I think we do a good job here

Approximately what percent of students in your school district are obese?

Somewhere around 10%.

What are the demographics of kids here?

Their parents have to be active duty to come to school here. If you live on base you can automatically get enrolled into the school. If you live off base then you have to apply to come to school here.

Do a lot of kids live on base?

From my understanding, there is a greater population of students who live off campus. I think many live in the general area but they can live anywhere, in other districts.

Have you noticed any changes being made in response to the childhood obesity epidemic?

Yes. The Texas Nutrition Policy started in the 04-05 school year. It is really strict on French fries and those types of food. We used to fry here, but they implemented a Texas public school Nutrition policy in the 04-05 school year and gave us until this year to make the change to ban fried foods so we have to bake everything. At middle school you can only offer a French fry type of thing three times a week. At the elementary school you can only offer it once a week. It's already fried at the manufacturer but frozen and then we bake it in the oven. You can do it every day at the high school. But because it's a middle school/high school campus I just do it three times a week. So on Mondays and Fridays they get chips and Tuesdays through Thursday you have an option to get fries. And you can only get one order of fries at a time. So for instance if a student comes through and wants two they have to get one and come back through the line to get another. And you can't buy it for a friend, the friend has to come through the line. There are size limits for Gatorade, chips, and ice cream. You can only have so many grams of sugar per serving and fat per serving.

[looking at a nutrient calculator]

Here is a nutrient calculator. [she gets a bag of popcorn] This should be good, it better be. If you want to see if a product follows the guidelines, you can plug it into the calculator. Wait, the fat content is too high...I thought it was okay but I'm really out of compliance.

How often do you check this?

I got this from the lady from Texico and I thought it would be okay. But I'm really out of compliance.

So what will you do, will you stop serving it?

Next year I will.

But can it be sold in vending machines?

Between certain time periods. They can have it between breakfast and lunch but not during serving time. They can have it after lunch. But not during serving times and that kind of thing.

Have you experienced any funding cuts due to the economy lately?

Everything has been stable for me, I'm very fortunate to have good support from the administration.

Healthier choices are more expensive.

You have to stay within compliance and you get audited every five years. If you aren't staying in compliance in previous years I think it's pretty obvious.

When they come are they just looking at the current year?

Yes that week and that year. But if they are suspicious they can look at records from previous years. I think you have to keep your records for five years. You would have to produce them.

Also, are more students qualifying for free and reduced due to the economy?

Not on this campus or this school. Everyone at this school has a job.

What are your opinions on advertising in schools? Is there a lot within this school?

Not on this campus I don't think. I don't know if it is right or not... I mean you are trying to encourage them to eat healthy and be healthy so it's probably not a good idea.

[looking at some records]

You have to keep a record of what you serve. So for instance on Monday we had chicken nuggets with a roll as the entrée. For a meal to be reimbursed the kids must take the entrée as I have defined it. When the student walks away from the register I don't care what they do with the food – I mean I shouldn't say that – but I just want to get that money from the government.

Here are the chicken nuggets and she'll record how much was prepared and served. We have to keep records of temperatures.

[looking at kids coming through the line]

What's being served today?

Corn and green beans, tator tots, chicken cordon blue or the hamburger/cheeseburger meal, fresh salad, pasta, We've got the fruit and veggies.

Is it always ranch dressing?

I just do ranch... it's easier. I used to offer Italian but they never used it.

An entrée plus two components is a reimbursable meal.

I'll take you to the snack bar now.

Ice cream, sandwich, chips (several baked and reduced fat options), salads, pretzels every day, popcorn chicken is today, water, Gatorade, NutriGrains, I also serve NutriGrains for breakfast now a la carte.

*Interview #2
Boerne ISD
Food Service Director*

What are your responsibilities as the Food Service Director?

I oversee 52 employees and we have 10 campuses so each campus has a self serve kitchen meaning we prepare the meals in the kitchen. I have to make sure all the employees are at work every day and I oversee purchasing all the groceries and repairs on the equipment, purchasing the equipment. Making sure we have schedules in place so all the teachers know our time frame. Actually our schedules are done by the principal so we follow their schedule at lunch. I order commodities each year.

Do all the schools have the same menu?

Yes, they all have the same menu. It is easier; we work on a 4 week cycle menu. That way we have the same thing repeating each month and that makes it easier. I'm already planning the menus for next year and I just placed my order for the commodities for next year. We have to plan that in advance. So I'm getting ready for next year already.

Do you visit each school regularly?

I don't get out as much as I would like but I am required to visit them every year for an on sight review. It's in depth to make sure that the meals going through are reimbursed meals.

This district is only 20% free and reduced. That is low. Most of our sales are done with a la carte sales. Our a la carte sales involve the same foods on the menu but they can pick and choose items. It's all low fat, low sodium, whole grain. I use turkey hot dogs and whole grain buns. I use ground sirloin when I serve beef because it's much lower in fat. I have a very active parent group on a nutrition committee and we review it all the time. They are always watching out for me which is good. We try to do things so we can prepare menus from scratch as opposed to....

A lot of bigger schools get a lot of commodity dollars to spend and the way they use their money is by processing something like ground beef into steak fingers or chicken fingers in order to get more yield on their product. So they base their menu on those things and that's what kids like to eat. And that processing, yes it is processed food, but it's done at a lower sodium lower fat, more soy because it is processed for the school lunch program.

This process is done differently than something you would buy at HEB for your use. In other words you could get a chicken fried steak and you just heat them and eat them but what you would get at HEB is completely different from what is served in the school lunch program.

So you think they are making an effort?

They are eliminating the Trans fats. They have done that. We do a lot of low fat low sodium whole grains now. Almost everything I do has something to do with that.

What is a typical meal like?

Here is a menu. Like today to make it easier on my staff and I've had to reduce my staffing...so I just have one choice today and it is chicken nuggets, mashed potatoes with gravy, green beans, wheat roll, fruit, milk/juice.

We offer two choices of fresh fruit every day and two vegetables, most of the time they are steamed. We get a lot of frozen vegetables- I try to get that as much as possible rather than canned.

Now those chicken nuggets were a product of processing from our commodities. So we turned out chickens into chicken nuggets and chicken patties. Now they were processed at a lower fat because they use soy. Everything is a better product.

Tomorrow we have two choices. Tuesday, Wednesday, and Thursday I offer two entrée choices. Our spaghetti we use a low fat meat sauce and low fat ground beef. Our cheeseburgers are very low fat, no Trans fats. We use wheat buns. The parents on the committee that I am with... we have a SHAC- School Health Advisory Council. It was something that was mandatory that we had to create and mandatory for all school districts. So I'm just a small part of that... it includes sex education, health, PE, tobacco, alcohol, and nutrition. And so we have a subcommittee for nutrition and we meet quarterly. The group is mostly parents appointed by the school board, some administrators, some teachers, and some students. It's really interesting to hear the students' point of view- It's good because you want to hear their feedback. It has been a good thing because they suggested, well I use wheat and whole grains so why don't you put it on your menu. I said well I use turkey hot dogs so they said why don't you put that on the menu.

In our commodity program we are given a choice to participate in the Fresh Fruits and Vegetables Program. It's a program set up by department of defense and they provide fresh fruits and vegetables and you are given so many dollars to spend on that. That comes through our regular produce company that we do business with every week. They also have a program which enables us to have fresh vegetables come in from the farm. I mean it's local, they come in dirty. I've been participating in that for about 5 years. Although I'm given very little dollars to spend it helps. It helps a lot to offer more to the students.

I see these slogans...

These slogans are part of the CATCH Program- Coordinated Approach to Children's Health. That's the acronym. They have cute posters and a lot of our schools have the posters in them and give lessons on the GO, SLOW, and WHOA. I try not to serve any WHOA foods!

What percent of the students in the district eat the school lunch?

20% of the district population qualify for free and reduced. And I would say about 30% of the student population eats the school lunch. It's a low participation. We have over 6200 students in the district and we serve about 2000 meals each day. But, of course, it also depends on what we're having!

How strictly do you follow federal guidelines?

We follow them to the max. When you go to squaremeals.org... Texas Department of Agriculture governs our program. They have online a nutrient calculator. If you select Texas there is virtually nothing you can serve these kids.

So you think Texas is stricter than other states?

OH YES! And it's the serving size, the fat, the sugar. I mean very very strict.

Before you put a meal out do you check it on the calculator?

Oh yes! In fact, there are some recipes put out by the USDA that do not meet nutritional standards in Texas. Cause it has too much sugar or fat. Very interesting!

They do a review every five years- a compliance monitor comes and reviews. They make sure you're serving your reimbursable meal...mine is traditional. And then we are offer versus serve so the students have the right to choose 3 of the 5 meal components that we offer. And if they take 3 it's a reimbursable meal. If they take 2 we have to count that as a la carte. They can take all five if they want, it doesn't matter, just as long as they take 3.

So someone could take milk, a wheat roll, and an apple and that is reimbursable?

Yes because it incorporates 3 components.

Do you think the nutritional content of school lunches impacts academic performance?

OH YES, I think food has a direct impact on academic performance. Children eating meals high in sugar can't perform. Sugar not only causes hyperactivity and obesity but it causes a high and then an extreme low- and that happens to someone who is healthy...And we have so many children who are diabetic or the opposite. It would definitely have an impact and we strive to give them protein every day. That's something parents didn't understand- I'm required to give them 2 oz. of protein everyday whether it's in the form of cheese, beans, or meat. They didn't realize that I'm required to do that. We have guidelines to follow from the USDA. There is a chart with the traditional meal pattern for what you offer.

Yeah, I think it definitely has a direct impact on their performance.

Approximately what percent of students in your school district is obese?

They did the Fitnessgram last year and the nurse would have actual data. I believe around 10%.

Have changes been made in recent years that you are aware of in an effort to reduce the child obesity epidemic?

Our Texas Public School Nutrition Policy was the biggest effort of all to make us start taking action in just 3 months time, that's all the warning we had. Each year we've had to get stricter...it was a four year plan begun in August 2004. Susan Combs was the commissioner of agriculture at the time and when she put out that nutrition policy each year we had to do something stricter. Elementary schools were the strictest; I mean they couldn't have access to anything. They were used to pizza parties and cupcakes for birthdays but that would compromise their lunch so we had to put a stop to that. So it has been a big transition and it has been hard for administrators to understand where we're coming from. But we have to know where they're at too. But all in all we've worked out a good plan and I think we're all on the same page now. Or using M&Ms for math class and then eating them...you can't do that anymore.

Has your funding been reduced due to the economic downturn?

No, funding comes from the fact that the meals are prepared and we get reimbursed for meals. And each year that reimbursement rate goes up a certain percent. And if you get more meals served, the more money you get. But I don't have many reimbursed meals here so I get most of my money from paid meals. And our sales haven't gone down, actually they have gone up. Our

meals cost \$3.00 in primary schools and \$2.25 in secondary schools. We have some of the highest prices in the state of Texas. So the economic downturn hasn't really affected us.

Are vending machines in your district?

Yes our district has some vending machines but of course if they are in the cafeteria in the serving area then I am in charge of those because I get the funding from them...well, a certain percentage.

Across the district, everything in the machines are in compliance. So if there are candy-bars in the machines I have to ask the vendors to take them out. I have to monitor it.

What about advertising in your schools?

Those are called exclusive contracts and we can't do that anymore. You can only do a bidding process with the company- it can't be exclusive anymore. In fact the vending machines can't even have the coca cola emblem on them...it has a water ad instead.

*Interview #3
Harlandale ISD
Food Service Director*

We are Provision 2 so we have a completely different view on how to create our menus. Edgewood is a Provision 2 and Southside but everyone else is going to be non-provision 2. And that is predominately because we have lower economic populations. Our revenues are totally different than what'd you see in a Non-provision 2 school.

What are the main differences?

Most of our funding comes strictly from participation because we feed students for free. There is not a lot of money exchange and we don't have a lot of a la carte sales. Everything is driven by how many kids we feed. We have 98% participation- we serve breakfast in the classroom from Pre-K through 12th grade. So everyone eats breakfast for free, we are at 98% there and for lunch we are at 90% participation. We are completely driven from that. If we don't get a high participation then we don't get enough funding to be solvent. Whereas you look at Non-provision 2, their kids are paying for their meals or they are buying a la carte items. We have 88% that qualify for free and reduced meals. We have to meet price points because we are giving it for free. For the 12% of the kids that would typically be paying us for the meals, we are losing revenue. We feed meals free for everyone. So we have to consider the 12% of that loss and make up for it in other ways. There's a lot that we have to consider. Everybody has to consider their price points but because we have to compensate for that loss, we have to look at things a little differently.

What is a typical meal like for you?

Would you like to see a menu? It varies, we have a 4 week cycle and it varies from elementary, middle, and high.

So you have a different menu for elementary, middle, and high school?

They are similar in some ways because we try to keep our orders as simple as possible to make it easier on our vendors but what we feed at a high school level is different from elementary because they just don't always like the same foods. This is our high school menu so you'll see a variety of things. We use turkey chili in our "corn chip pie. We have a premade turkey chili instead of using hamburger. Our hot dogs/corn dogs are made from turkey.

We use all low fat cheese and we do not use any oil. We don't fry anything. Our enchiladas are healthy. We make them here – we steam the tortillas, use no oil, we use low fat cheese. Parents will ask how serving pizza can be healthy. Well, we use low fat pepperoni, low fat cheese, and a whole grain crust. And we only serve the children one slice. We have made efforts to make these foods healthier. Because they are still kids and I'm a registered dietician myself and I still believe that they should have some things in moderation. That is the key- to teach them to make the better choices. If you restrict foods they will just want it more. So it's a process of them being kids and adults- are you going to tell me that adults don't eat pizza. But we can make it as healthy as possible without them even knowing what we are doing. We do turkey a la king- that's a scratch item with vegetables, turkey, and a gravy sauce over rice. Chicken parmesan with pasta. There are various items- lasagna, oven fried chicken baked in our ovens, fish sticks, spaghetti. It varies. Every year is pretty much the same although we try to switch it up somewhat. But we are limited in school nutrition and we have to stay on budget. I would love to buy all sorts of things, but our district is going to fund that. So we find the best we possibly can with the money that we have. And some days our oven fried chicken is one of our highest priced items because it is a whole meat chicken- it's chicken breast- so we spend a lot there but then we go cheaper on things like fish sticks. You come to an average per week versus looking at just one item. You know you can't get cheap with everything, it just depends. We do a lot of commodity processing which enables us to use...we get dollars called Pal Dollars based on how many kids we feed (our participation) which is high for us. We get 800,000 dollars toward commodity processing. What happens is if we were going to make hamburger patties we say we want so many pounds based on our velocities from last year- we want this many patties made- and the pay dollars provides a discount off the case. So instead of it being \$20 a case we get it for \$14. So it helps us bring out price point for that particular item down, which is very helpful. People use their commodity dollars differently depending on their menu. We are trying to get our price point as low as we can for our high velocity foods. So, you know, it just depends on how you use your commodity dollars. Like Randolph probably has 50,000 dollars. We are 22 schools and 14,000 kids and Randolph Field is small. We do breakfasts in the classroom and we've made a lot of effort- our biscuits are whole grain biscuits, our turkey sausage...our morning roll is similar to a sweet roll because you want it to be visibly appealing to the kids but it is all whole grain...I could buy a honey bun and serve it for breakfast but I'm not going to do that. The honey bun would be cheaper than what I am paying for the morning roll and it would probably even comply with nutrition policy – believe it or not – but I'm still not going to do that. We want to give them foods that they like because ultimately you want them to eat it. We tried to do something called Bagelors which is a bagel with cream cheese inside and they are flavored strawberry and blueberry...it's a fantastic product...but our kids saw that dough of a bagel and it was the end of that. They were like "no thank you"...they just wouldn't eat it.

And you have to think about what they are eating at home.

Exactly, it's hard because they are eating fast food and crud at home. And that's what they want to eat...so we have to make a mixture...we give them healthier versions of some of those things.

We make better versions but it is still something they like. You have to manipulate it as much as possible.

I think that makes your job so important- you are really providing an example of healthy foods for them that they don't get at home.

Right, and every day we also provide a baked potato plate, a chef's salad plate, and several sandwich options. So they also have those options. We also tried a yogurt parfait but it is just not what our clientele are looking for. If they're not going to eat it then we don't need to provide it. We hoped they would like the Bagelors and we left it in for a couple months and they just didn't like it. But what I tell parents, I have a 6 yr old, a 3 yr old, and a 6 month and I wouldn't put anything on the menu that I wouldn't feed them. And that's the honest truth. That's how I decide what I will feed these kids. Now would I let my kids...like we do sell some items like baked hot Cheetos and parents would say you sell those...and yes, if I was going to give my kids chips which I don't typically do I would give them a baked Cheeto. Now I wouldn't give them money every day to buy them but that's me as a parent. We are giving them the best options but ultimately the parent has to be responsible and I can't make that choice for them. We have to stay solvent and make enough money that we can run this program. I mean we make 600,000 a year which is nothing compared to Non-provision schools. The kids here just don't buy. But my milk budget is 1.2 million because they drink that much milk. And its free to them but they have learned this community to drink milk and that is important. So it's a win/lose situation. You just have to do the best at what you provide. We can't do everything perfect- we can't provide organic foods to everybody, but we do pretty healthy foods. And yes we make it look like generic foods on the menu because this is what the kids are seeing. But we do work very hard to make sure that what we provide is a healthy food for them. And we follow nutrition policy but a lot of time we try to do even better. It's just better for the kids.

We offer fresh fruit and fresh vegetables every day. We do offer versus serve. We don't just give them a straight tray because that generates so much waste. They have to choose three but we let them choose what they want. They could choose 3 vegetables if they want it. Our kids actually do eat a lot of fruits and vegetables and that's what I want. I want them to choose it at school because they are not getting that at home. So they get it here which is great. We provide usually 4 different types of fruits and vegetables everyday- some are cooked and some are fresh. Sometimes we serve more depending on the menu. And they can take three of them if they want. And if a kid comes up and wants another, we'll give it to them. By all means eat more fruits and vegetables, that doesn't bother me! We really try to push as much as we can with the fruits and vegetables.

How often do you visit each school?

It's very hard to get out there especially for my position because I also do HR things to, like handling employees. Underneath me I have a supervisor who handles most of our commodity processing and our inventory system. She does a lot of handling recipes, making sure they are up to date. And then underneath me I have two managers of operations who are previous managers in my kitchens usually at the high school levels and all my schools are split between them. They are the ones if I am having an issue I send them out. They are out there on a daily basis visiting my schools. I keep myself on a schedule. They never know when I'm coming. We have manager

meetings once a month, sometimes more often. I try to visit the schools as much as I can but a lot of my time is dealing with employees and administrative stuff like dealing with the budget.

We do a lot of testing in the schools- usually about this time of the year we still start testing for next year to see how new items are perceived. We do a first run through in a few classrooms and if it is successful we will test it on a larger scale. For example breakfast is on a two week schedule and kids get tired of certain foods. Some items, like a pig in a blanket, is loved and if we attempted to take it away we'd be in a lot of trouble. They just never get tired of it- so there are certain things we wouldn't dare take away but there are also things they get tired of.

How strictly do you follow federal guidelines?

Well we have to. Well, we are supposed to. Auditors come every five years but I choose to be as strict as I can for the entire time. That's just me personally, not everyone does that ...and of course we're not perfect...even when the auditors come through, we didn't have any findings but there will still be times when a manager forgets to put something on the production record. But we have a system where we pull production records annually in January and my supervisor and I review every production record for a particular month and then we start the training process each year to get them back on track. But as far as making sure we are providing the right foods- we don't put anything on our menu that doesn't comply with federal guidelines. We just don't and a lot of that is because we are dieticians. It really is. Because we are concerned- we are truthfully concerned- that is our field. So we tailor what we are doing to make sure it complies.

With the USDA and TDA there is a lot of gray area.

But you do have 5 years in between CRE's and nobody comes in between. So you really could do anything you wanted. You know when they are coming. But it's harder to do backpedaling to fix the managers and train them to do things correctly right before they come. So we comply the whole time. That's part of my job is to follow federal guidelines. If we got reported my job could be gone.

Do you think nutritional content of school meals impacts academic performance?

Ultimately what we have found here... There is a direct relationship. Eight years ago we started serving breakfast in the classroom. The reason for this was a push for better academic performance and higher test scores. For our demographic, the meals that these children eat are at school. And sometimes that's all they eat all day. Academically speaking, we are aware that the only way for them to learn is to eat. It's to get nutrition. And there is research everywhere that says it. There is no doubt that you need to ingest good nutrition to think. Many of our students were coming to school hungry. And many of these kids eat lunch at school and do not eat again until breakfast. So does the nutritional content of our meals impact academic performance?

Yes- I believe so! This district is very in tune with this issue. They know that nutrition is important and they support it as best we can. We have a huge after school program where we feed snacks and we provide free evening meals for the elementary level schools- It is that big of a push. The district wants better test scores and if we are even going to attempt to obtain higher scores these kids need to eat nutritionally. You give them candy and they get a high and then a low...Trying to get a kid to do something when their stomach is growling is impossible. My children can't do anything hungry and I can't function when I am hungry. So how can you

expect a child to? It's important to give them everything we can- and we give it nutritionally... We give them what they need to be able to think and do their work.

Approximately what percent of students in your district are obese?

Our students recently completed the Fitnessgram but we have found that this data can be manipulated and is inaccurate. Our data indicated that almost 98% of our students completed their fitness goals which is ridiculous. We know our kids... We have a high percentage of obesity in our district. Our obesity rates are *very high*. These kids are not at a normal level. The Fitnessgram was supposed to be something that could provide us with good information but it didn't. The data is worthless.

With all the talk of the obesity epidemic lately, do you think beneficial changes have been made in schools?

Many changes were implemented in 2004. Changes have been made but I went to a school in the Houston area to look at equipment and they still had fryers in their schools- and last year fryers were supposed to be eliminated. I found out that they were exempted from USDA because they claimed that they have too many kids in their district and in order to produce enough volume they need to use frying because it is faster. Ovens take up more space and they claimed they don't have enough space in the kitchen to provide for the kids. Unfortunately, loopholes are everywhere and you can choose to do more or you can choose to do the bare minimum... For example, you can sell Hershey bars with peanuts. It is okay since it has peanuts. So you can sell a snickers – but do I choose to do that? No, but some do because they can and they want to make money off of it. I am a dietician so I have a nutrition background and I personally *cannot* sell a snickers bar. I would never give my children that. And I will not do that to other kids knowingly. Because you know they are going to buy it if I sell it- It's human nature. I'm trying to provide the best environment here because when they go home they are free to go to McDonalds. And unfortunately that is the part that makes the kids obese. From four o'clock on they are free to go to McDonalds... and that's why they are obese.

What is the school districts view on vending machines?

We do have them but they are regulated. At elementary and middle school level they can only be 100% juice or water. The reason why is because when they have school functions there is something to buy. The kids don't really take to them. In high schools there is a limit to how much sugar drinks can be in the machine. Right now 20% can be sugary drinks- like soda or Gatorade. We still do that but it is being phased out. The district decided that, for purposes outside of school, like when they have basketball games there are other people utilizing the machines and so they still want to have that option. We cannot have them where meals are being served so if they are in those areas they are on timers and are turned off. There are many rules for vending that we have to follow. The high schools have some snack machines but we follow nutrition policy on those too- so no candy or that kind of thing. At Harlandale foods in vending machines must have below 5 grams of fat per serving and that is not part of Nutrition Policy but we are doing that because we are trying to be better. We have to still provide things but we try to do the best we can while we are providing. Ultimately there are more than just students that utilize these campuses so our district still wants to cater to that clientele. And it is revenue- it does not go to child nutrition- it goes to the school itself. So we try to have another form of revenue to use for school functions but ultimately it will be phased out eventually.

What about advertising?

Our machines will have the Coca-Cola or Gatorade symbol on them. But at the elementary/middle level it will be Dasani. Because we have a coke vendor. That's part of the gray area. I'd prefer not to do any vending- they are going to go to their stop and shop and get what they want. If people know there aren't vending machines on campus they will bring their own. So we don't really need vending machines. But those schools want the revenue. Would I prefer to take it out- well yes but that eliminates a source of revenue. So it's a toss up- so we try to find the best way to make everyone happy and stay compliant. Menu wise, I get to do what I want to do. I think vending will go out completely- we are headed in that direction- but we are trying to ease it out.

Have you found funding decreased due to the economic downturn?

The funding has not decreased. Each year we receive a three percent increase on reimbursement for each meal. It's been that way for many years. The problem is that the price of food has increased ten to fifteen percent. So our funding has not matched the increase in prices. It has been tough, but if you utilize your commodity dollars the way you are supposed to and you take the time to research you can find products. You need to price things correctly- but it's possible. Because we made money last year, so you can do it, but it takes a lot of effort. I watch my numbers on a daily basis for how many reimbursed meals we have each day. It's part of my job. If I see something decrease I have to find out why- how did I lose a hundred kids one day- That's close to \$10,000 lost. You add that up several times over the year, you are losing a lot! So the funding is coming in but it doesn't match food prices. Prices skyrocketed and they have stayed at that point. For example, we have a huge milk budget and we were serving milk in the plastic bottles which is more expensive. We had to switch back to the paper cartons and we saved \$400,000. You can make changes that enable you to still provide healthy foods. Our food may not be organic but its healthy. And, of course, our clientele isn't asking for organic food. Maybe they are serving organic products in the Alamo Heights ISD, but they charge out the wazoo. We can't do that but thankfully our students aren't asking for that. But we try to educate our parents that what we are providing is healthy. You're feeding my kids pizza, hotdogs, hamburgers. We have comparison sheets that show our hotdog compared to a normal hotdog or our pizza compared to a normal pizza. A lot comes down to portion sizes and many parents don't understand that. It's called moderation! I try to drill that in. You eat in moderation and you can still eat tasty foods. Kids have ONE slice of pizza and fruits or vegetables and milk. They eat it and they are full. They could go back and buy another piece but they don't.



2010 January/February

**Boerne Independent School District
School Cafeteria Menu**

**Boerne ISD Food Service Department
123 W. Johns Rd. • Boerne, Texas 78006-2023
830-357-2064 • <http://www.boerne-led.net>**

IMPORTANT ANNOUNCEMENT!
THE FOOD SERVICE DEPARTMENT IS LOOKING FORWARD TO A GREAT YEAR! PARENTS ARE ALWAYS WELCOME TO JOIN THEIR CHILDREN FOR LUNCH OR BREAKFAST. IF YOU HAVE ANY QUESTIONS ABOUT YOUR CHILD'S MEAL ACCOUNT, PLEASE CALL THE CAFETERIA MANAGER AT THE SCHOOL YOUR CHILD ATTENDS.
BOERNE HIGH SCHOOL - 830-357-2215
CHAMPION HIGH SCHOOL - 830-357-2615
MIDDLE SCHOOL NORTH - 830-357-3115
MIDDLE SCHOOL SOUTH - 830-357-3315
CURINGTON ELEM. - 830-357-4015
FABBA ELEM. - 830-357-4215
FAIR OAKS RANCH ELEM. - 830-357-4815
KENDALL ELEM. - 830-357-4615
CIBOLO CREEK ELEM. - 830-357-4415

GO, SLOW, WHOA
GO - These foods are lowest in fat. You can eat them "almost" anytime.
SLOW - These foods are higher in fat. You can eat them "sometimes" - a few times a week.
WHOA - These foods are highest in fat. You can eat them "on occasion" combined with other GO foods.

Extra Items-A La Carte Items
(These may be purchased for an addtl. cost.)
Milk - 8 oz - .40¢
Water - 8 oz - .40¢
100 % Fruit Juice - 4 oz - .25¢
COOKIE MONDAY!
Reduced Fat/Whole Grain Cookie - .50¢
ICE CREAM FRIDAY!
Reduced Fat/ Ice Cream - .75¢

IMPORTANT NOTES:
BOERNE ISD CHARGE POLICY
• At the middle schools and high school, there is a "NO CHARGE" Policy in effect. If a student does not have money in his/her account and does not bring money from home, the student will not be allowed to "charge" a meal.
• At the elementary level, your child will only be allowed a maximum of \$10.00 in charges in the cafeteria.
• After \$10.00 has accrued in charges, your child will receive a sandwich and a drink. (Allergies will be taken into consideration.)
• Students will continue to receive a sandwich and a drink until all cafeteria charges are paid.
• MENU IS SUBJECT TO CHANGE AND SUBSTITUTIONS MAY OCCUR.

If parents do not wish for their child to make Extra (A La Carte) purchases a flag may be placed on these sales on their child's account. Please call the Food Service Director's Office at 830-357-2064.
Menus subject to change due to school schedule changes, early release days, holidays, special promotions, and the last week of school.

The Texas Department of Agriculture issued the Texas Public School Nutrition Policy to promote a healthier environment in schools. All schools participating in the federal child nutrition programs (National School Lunch Program, School Breakfast Program and the After School Snack Program) must comply with the nutrition policies outlined defined by the U.S. Department of Agriculture's Food and Nutrition Services. Please visit www.squaresmile.com for a more in-depth definition of the Texas Public School Nutrition Policy.

1% Low Fat Chocolate, Strawberry, Vanilla, White, And Skim Milk OR 100% Fruit Juice is available with Every meal.
***Counts as two meal components
***Counts as three meal components
**May contain pork

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Jan. 25	**Steak Fingers Scalloped Potatoes Fruit Wheat Roll Milk or Juice	**Chickenburger on Wheat Bun Steamed Broccoli - Fruit Milk or Juice OR Baked Potato Salad-Fruit-Wheat Roll Milk or Juice	**Bean & Cheese Chalupas OR ***Pizza Spanish Rice-Fruit Milk or Juice	**Turkey Sandwich on Wheat Bread OR **Spaghetti w/ Meat Sauce Green Beans Fruit Milk or Juice Ice Cream Cup	***Pepperoni or Cheese Pizza OR **Chicken Nuggets Seasoned Corn Salad-Fruit Milk or Juice
Feb. 1	**Turkey Corn Dog Baked Beans Macaroni & Cheese Fruit Milk or Juice	**Oven Baked Chicken Mashed Potatoes w/Gravy Wheat Roll Fruit Milk or Juice OR **Hamburger on Wheat Bun Vegetarian Beans-Fruit Milk or Juice	**Super Crispy Taco OR ***Pizza Salad-Fruit-Brownie Milk or Juice	**Chicken Tetrazzini Garlic Bread Salad-Fruit Milk or Juice Ice Cream Cup OR Baked Potato Salad-Fruit-Wheat Roll Milk or Juice Ice Cream Cup	**Hamburger on Wheat Bun Lettuce/Tomato/Pickle Fruit Milk or Juice
					EARLY RELEASE
					5
					**Pepperoni or Cheese Pizza OR **Chicken Nuggets Seasoned Corn Salad-Fruit Milk or Juice
					11
					**Pepperoni or Cheese Pizza OR **Turkey Hot Dog on Wheat Bun Baked Beans-Fruit Milk or Juice Ice Cream Cup OR Baked Potato Salad-Fruit-Wheat Roll Milk or Juice Ice Cream Cup
					17
					Chicken Fajitas OR *Pizza Pinto Beans-Fruit Milk or Juice
					9
					Stromboli OR *Pizza Steamed Broccoli-Fruit Pudding Milk or Juice
					15
					SCHOOL HOLIDAY
					16
					18
					19

MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY	
Jan. 25	Feb. 8	Jan. 26	Feb. 9	Jan. 27	Feb. 10	Jan. 28	Feb. 11	Jan. 29	Feb. 12
*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Baked French Toast Strips w/Syrup Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	**Mini Corndogs w/Syrup Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	**Bean & Cheese Taco Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	**Breakfast Pizza** Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	**Waffles w/Syrup Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk
Feb. 1	(Holiday) Feb. 15	Feb. 2	Feb. 16	Feb. 3	Feb. 17	Feb. 4	Feb. 18	Feb. 5	Feb. 19
*Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk	*Toaster Pastry Choice of A Fruit or Assorted Juice OR Cold Cereal Toast/Jelly Choice of A Fruit or Assorted Juice Milk								

NOTE FROM DIRECTOR:

During this cold and flu season we pay particular attention to the safety of our health and well-being, but we must also pay attention to the safety of our food and how it is handled and prepared. Frozen meats should be thawed in the refrigerator or under cold running water. Thawing may be done in the microwave if the meat is prepared right away. It is very important to follow the manufacturer's cooking temperatures to ensure your product is cooked at a safe temperature. Storing cooked meat can also be a food safety issue if it is left out too long to cool.

For more information on the proper food handling and cooking temperatures, please check the website below:
http://www.fda.usda.gov/Fact_Sheets/How_Temperatures_Affect_Food/Index.asp

If you have any questions, please feel free to call me at 830-357-2064.

Cheryl Rayburg

*This menu repeats at the end of two weeks. 1% Low Fat Chocolate, 1% Low Fat Strawberry, 1% Low Fat Vanilla, or Skim Milk and assorted 100% Fruity Juices available with every meal. Milk, Juice or both must be chosen each day to make a reimbursable meal. **Counts as 2 items. ++May contain pork.

The Breakfast Menu

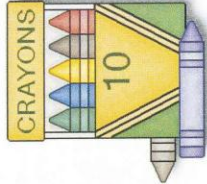
Students may select 3 or 4 different food items. Milk, juice or both must be selected to make a reimbursable meal. Students have a right to decline any food items at either meal. If the proper meal items are not selected for a reimbursable tray, students will be charged a la carte prices.

Breakfast Prices

Elementary.....	\$2.00
Middle/High.....	\$2.00
Adult/Non Enrolled.....	\$2.45
Children.....	\$.30
Reduced.....	
Lunch Prices	
Elementary.....	\$3.00
Middle/High.....	\$3.25
Adult/Non Enrolled.....	\$3.70
Children.....	\$.40
Reduced.....	

A La Carte Price List

Entrees.....	\$2.50	100% Juice (4oz).....	.25¢
Vegetables.....	75¢	Bottled Water (8 oz).....	.40¢
Fruits.....	75¢	Milk (8oz Cartons)	
String Cheese (1 oz).....	50¢	1% Low Fat Chocolate.....	40¢
Bread.....	25¢	1% Low Fat Strawberry.....	40¢
Yogurt Entrée.....	\$1.00	1% Low Fat Vanilla.....	40¢
Pizza Slice.....	\$1.75	1% Low Fat Vanilla.....	40¢



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SLOW - These foods are higher in fat. You can eat them "sometimes" - a few times a week.
WHOA - These foods are highest in fat. You can eat them "on occasion" combined with other GO foods.

Applications for Food Service Workers are accepted: Apply at Boerne ISD Administration Building, 123 W. Johns Rd., Boerne, Texas



NOTE: Not all a la carte items are available daily at all locations. As a parent, if you do not want your child to purchase a la carte, please let your manager know.

In accordance with Federal law and the U.S. Department of Agriculture policy, this institution does not discriminate on the basis of race, color, national origin, sex, age or disability. To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410 or call 800/795-3272 or 202/720-6382 (TDD). USDA is an equal opportunity provider and employer.

Reminders

- Free and Reduced Meal Applications are available by calling 830-357-2064
- Reminder: If you were eligible for Free and Reduced Meals last year, you will need to resubmit a new application for the 2009-2010 school year.
- Free and Reduced Meal office hours are 8am -4:00pm Monday-Friday at 123 W. Johns Rd.
- Don't forget to turn in your 2009-2010 Free and Reduced Meal application.
- If you qualify for free lunch, you also qualify for breakfast!
- If there are any questions regarding student charges, please call your school cafeteria manager.
- Breakfast, Lunch and a la carte meals may be purchased in any amount in advance by cash or personal check payable to your school's cafeteria.
- For your convenience, visit www.boerne-isd.net and click on District Departments, then click on Food Services and click on the LUNCH MONEY NOW link. You will be able to view and pay your children's meal account with your Visa, MasterCard, American Express, Discover or PayPal.
- Students have the right to decline any food items.
- If the proper items are not selected for a reimbursable meal, the student will be charged a la carte prices.

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