The Relationship Between Student Demographic Variables and Performance in a National FFA Career Development Event

This study examined the impact of demographic variables on participant performance in the 2005 National FFA Livestock Career Development Event. Participants were asked to respond to a wide array of demographic questions from gender to how many agricultural education teachers were in their school? The demographic variables which had the highest correlation with participant performance were: 1) Years of involvement in livestock judging, 2) Prior livestock judging experience, and 3) 4-H livestock judging experience. When looking at demographic variables for predicting team emblem based on total team score at the 2005 National FFA Livestock Career Development Event we find that: 1) Number of years involved in livestock judging, 2) Gender, 3) Grade point average, and 4) Cattle is my best specie to judge, are all significant factors in predicting gold, silver or bronze emblem placing in the 2005 National FFA Livestock Career Development Event. Examination of these demographic variables can provide insight into the recruitment and training of students for this particular career development event.

Introduction

The National FFA Organization (FFA) is committed to developing youth through premier leadership, personal growth and career success. One way FFA achieves this goal is by providing opportunities for students to showcase the knowledge and skills they have acquired in agricultural classes through a competitive venue. Career development events (CDEs) add a real world experience for students involved in agricultural education. Since 1928, FFA has worked to create CDEs that demonstrate the meaningful connections between classroom instruction and real-life scenarios (National FFA, 2006). Career development events build on what is learned through agricultural education classes and FFA activities.

These events are designed to help prepare students for careers in agriculture. Classroom instruction comes alive as students demonstrate their knowledge and skills in a competitive setting. Career development events test the abilities of individuals and teams in 23 major areas of agricultural instruction ranging from livestock evaluation to floriculture (National FFA, 2006). Currently, National FFA offers 23 different career development events and one career development activity. Regardless of the event or activity an FFA member participates in, the student will come away from this experience challenged and motivated from the experience of competing as an individual and as a team member.

Examining the demographic variables of students who participate in this event can benefit agricultural education teachers in many ways. If agricultural education teachers are aware of the demographic make-up of students who typically excel in this event, they can narrow their recruiting focus to certain students who meet these criteria. This information could be beneficial to beginning and pre-service teachers who may struggle to assemble CDE teams early in their career. Knowing how to select CDE team members based on demographic variables can lower teacher frustration and hopefully decrease

burnout and teacher turnover especially with beginning teachers. This information may also be useful to other individuals such as extension agents or community volunteers who are active in the recruitment and training of youth for livestock evaluation competitions. These demographic variables are only a point of reference for educators to focus their attention. We certainly cannot select CDE participants solely on demographic characteristics, but we can use them to our advantage as educators in making decisions that will impact students and local programs.

Conceptual Framework

Agricultural judging competitions for high school students can be traced back in history to the 1800s. According to Tenney (1977), agriculture teachers started holding judging contests soon after the Smith-Hughes Act of 1917 brought the subject of agriculture into public schools. The first state-wide contests were held in 1919 in the states of Alabama and Virginia. The first national judging competition designed specifically for secondary agriculture students was held at the 1925 National Dairy Show in Indianapolis, Indiana.

In May 1926, C. H. Lane, former Chief of the U.S. Agricultural Education Service, went to Kansas City, Missouri to meet with officials of the American Royal Livestock and Horse Show about establishing national livestock judging contests for secondary agriculture students. In November of 1926, the National Congress of Vocational Agriculture Students held judging contests at its first convention (Tenney, 1977). Only two years later, the National FFA Organization met for the first time in 1928. The judging contests continued to be sponsored by the National Congress of Vocational Agriculture Students until 1936 (Tenney, 1977).

Judging contests continued to be a part of the National FFA Convention, but were not officially recognized as a part of the FFA program until they were renewed in 1947, after being discontinued because of World War II. Prior to 1946, contestants and teams were rated on a numerical scale and awards were given to the winners (England, 1996). After 1946, the Danish system of awards was adopted for National FFA Contests. The Danish system of awards recognizes contestants and teams with rankings of gold, silver, or bronze emblem.

The National FFA Organization has conducted judging contests at the National Convention since 1947. From 1928 until 1998, the National FFA Convention and competitions were held in Kansas City, Missouri. From 1999 to 2005, the national convention and CDEs were held in Louisville, Kentucky and were moved to Indianapolis, Indiana beginning in 2006. According to White and Christiansen (1978), the contest program has been worthwhile in regard to educational benefits received by participants. White and Christiansen (1978) also state that educational values learned in FFA contests carried over to future endeavors of contest participants.

Townsend and Carter (1983) studied the relationship between participation in FFA activities and the development of competencies in leadership, citizenship, and cooperation. They found that participation in FFA activities had a positive influence on

the development of these competencies. Rathbun (1974) conducted a similar study in order to examine the relationship between involvement in vocational student organizations and student success and development. This study found that students who were heavily involved in vocational youth organizations were perceived as having higher levels of ability in leadership, citizenship, character, responsibility, confidence, and cooperation.

More contemporary literature confirms the benefits of participation in FFA contests. Vaughn, Kieth, and Lockaby (1999) found that competing in FFA provides students with a place for recognition and helps motivate students to set goals and complete tasks. Rutherford, Townsend, Briers, Cummins and Conrad (2002) found members of the FFA typically posses more leadership skills than non-FFA members. Agricultural education and FFA hold strong to the "learn by doing" method of instruction. Not only is this type of instruction practiced in the classroom and laboratory of agricultural science programs, it is supported and reinforced by activities such as career development events (CDEs) and supervised agricultural experience (SAEs) (Cepica, Dillingham, Eggenberger, and Stockton, 1988). Career development events (CDEs), formerly known as judging events are competitive FFA events that develop technical knowledge, judgment, reasoning, and sportsmanship (Cepica et al., 1988).

Career development events are a classic example of experiential learning. Conrad and Hedin (1981) defined experiential education as "educational programs taking place outside of the traditional classroom where students are in new roles featuring significant tasks with real consequences, and where the emphasis is on learning by doing with associated reflection" (p.11). The benefits of experiential education were realized in the late nineteenth century. The movement gained support from such prominent men as Johan Pestalozzi and Frederick Froebel who argued that the most effective learning could only be achieved through doing (Weatherford and Weatherford, 1987).

Weatherford and Weatherford (1987) noted several reasons why experiential programs such as FFA and 4-H can help adolescents develop life skills. Experiential education incorporates key elements of life skills such as problem solving, critical thinking, inter- and intra- personal skills, and connecting youth with adults and the community. An effective feature of experiential education is that it incorporates the cognitive, affective, and psychomotor spheres of learning (learning by doing). The model of learning provided by experiential education is consistent with the stage of human growth, because it allows for learning to occur appropriately for the learning style and developmental level of the individual.

The benefits of participation in livestock judging have been documented for years. Livestock judging has been associated with developing a variety of employer-preferred life skills such as communication, problem solving, and decision making (Boyd, Herring, & Briers, 1992). McCann and McCann (1992) reported that the livestock judging activity provides youth with an opportunity to develop necessary life skills. Participation on livestock judging teams is credited with improved critical thinking skills, enhanced self-confidence, and development of better team skills (Smith, 1989). According to Rusk

(2002), when youths learn the process of evaluation through livestock judging, these same skills can be integrated into other real life situations.

Existing literature on the National FFA Livestock CDE is sparse at best. Holt (1929) conducted a study of the training of vocational agriculture judging teams. He looked at the training of livestock and dairy judging teams in Illinois and Pennsylvania. Holt found that experience in teaching vocational agriculture was not of major importance; however, he also found that a successful judging team usually required a training period of two or more years. Holt concluded that even though a small percentage of judging coaches participated in judging contests in college, a high number of those who did participate in college judging events trained successful judging teams. Holt found that many judging coaches used pictures, charts and lantern slides to train their judging teams. The coaches in Holt's study indicated that practice and drill was the most significant factor in training their judging teams (England, 1996).

Herren (1983) conducted a national study on the factors associated with success of participants in the National FFA Livestock Judging Contest. His study revealed that teams who spent more time preparing for the contest tended to score higher. Advisors who had fewer years of teaching experience tended to have higher scoring teams. Teams from states with higher populations of cattle, swine and sheep tended to score higher in the contest. Teams that participated in more contests prior to the national event tended to score higher and teams whose advisors had previous experience in the contest area performed at a higher level. Herren also concluded that teams consisting of members selected by the advisors tended to score higher.

England (1996) investigated training methods of National FFA judging teams. She found that most successful judging teams were from schools located in small towns with populations ranging from 500 to 4,999 people. England also found that 77.5% of the advisors who trained livestock judging teams had previous experience in the livestock CDE. Experience was also a large success factor in England's study. Over 48% of students who were on a national FFA judging team were seniors in high school and reported having previous experience. Gender did not influence success of National FFA judging teams in England's study. However, over 65% of team members in her study were male.

Purpose and Objectives

The purpose of this study was to describe demographic differences between participants in the 2005 National FFA Livestock CDE and how those demographic variables influenced total team score. Total team score was then used to rank teams as gold, silver or bronze emblem. In this study there were 13 gold emblem teams, 18 silver emblem teams, and 12 bronze emblem teams. In order to accurately describe the demographic variables and how they related to team emblem, the researcher collected extensive demographic data on each participant.

Methods and Procedures

A descriptive-correlational survey design using a researcher-designed questionnaire was used to collect data for this study. The questionnaire was designed by the researchers to capture demographic information of the CDE participants. The instrument was reviewed for content and face validity by four agricultural education faculty members at a university in the southern region of AAAE. A pilot test was conducted to determine the reliability of the instrument. Seventeen undergraduate students in agricultural education and communications who had participated in livestock judging competitions participated in the pilot study. No changes were made to the instrument as a result of the pilot test.

The demographic section of the survey that was completed by the CDE participants was developed based on previous literature and from the suggestions of experts in the field of agricultural education who had trained numerous career development teams. Participants where asked to respond to:1) Gender, 2) Age, 3) Previous livestock judging experience? 4) Where did your previous experience come from? 5) Years involved in livestock judging? 6) Grade point average? 7) Which specie of livestock are you best at judging? 8) Size of FFA chapter? 9) Size of community? 10) Number of agricultural teachers are at your school? 11) Number of students who tried out for the livestock judging team at your school? These demographic variables were used to describe the participants of the 2005 National FFA Livestock CDE and helped to distinguish differences among different regions and states.

The population for this study was the participants of the 2005 National FFA Livestock CDE. In order to qualify for the National FFA Livestock CDE, teams must win their state FFA Livestock CDE which usually requires qualifying through a district or area contest format. This census study encompassed teams from 43 states with a total of 170 participants. Using the census method to collect data eliminated the threat of sampling error. Forty states consisting of 155 individuals responded to the survey yielding a 93% response rate.

Information packets regarding the study where mailed to the agricultural education teachers of the teams that registered to participate in the 2005 National FFA Livestock CDE. Each packet contained a letter explaining the purpose of the study and directions for administering the survey. The packets also contained four blank surveys with a postage paid envelope. Nineteen teams responded by mail to the initial request. The researcher followed up with the non-responders at the National FFA Livestock CDE and secured the surveys from 21 additional teams. A t-test was used to compare early and late responders in the survey. This yielded no significant difference. All surveys were administered by the agricultural education teacher who coached the team. This standard administration technique helped to control the threat of variation among testing conditions.

Descriptive statistics were run on the data to determine frequencies on categorical demographic data and means and standard deviations were calculated on all interval scale variables. Correlations were used to compare demographic variables among gold, silver,

and bronze emblem teams. Hinkle (2003) defines correlation as the nature, or extent, of the relationship between two variables. The researcher used the Davis Convention (1971) to describe the magnitude of the correlations. Stepwise linear regression was used to describe associations among gold, silver, and bronze emblem teams based on demographic variables. An alpha level of .05 was set *a priori* in order to determine statistical significance.

Findings

Frequencies were used to describe responses on categorical demographic variables and means and standard deviations were used to describe responses to interval scale variables. Gender was divided almost equally in this study. Over half, 50.3% (n=77) reported they were male, while 49.7% (n=76) were female. More than one-half, 63.8% (n=97) reported prior livestock judging experience with 36.2% (n=55) reporting no previous livestock judging experience.

When asked to identify their prior livestock judging experience, 61.8% (n=94) stated their experience was through 4-H, while only 5.3% (n=8) reported junior FFA livestock judging experience and 7.9% (n=12) of contest participants had experience with a junior livestock breed association. Some participants reported having experience from more than one area. Participants reporting that their best specie of livestock to judge was cattle accounted for 46.1% (n= 70) of the contestants. Just 21.7% (n=33) believed their best specie to judge was sheep. The remaining 32.2 % (n=49) stated they were best at judging swine.

In regard to the size of FFA chapters these students belonged to, 17.8% (n=27) said they came from a chapter of less than 50 members. Chapters with 5 1-100 members accounted for 3 4.9% (n=53) of the survey participants, while 28.3 % (n=43) were members of chapter with 101-150 members. The 15 1-200 member category made up 9.2% (n=14) of survey participants and 5.3% (n=8) came from chapters with 201-250 FFA members. Only 2.6% (n=4) of the survey participants were members of chapters with 25 1-300 members and 2% (n=3) of the survey population reported belonging to a chapter with over 300 members.

When survey respondents answered the question “What size community is your school located in?” 5.3% (n=8) reported they lived in a community of less than 500 people. The next category of 500-2500 people yielded 28.9% (n=44) of the survey population while 3 5.5% (n=54) of the survey respondents stated their community had a population between 2501-10,000 people. The 10,001-50,000 people category boasted 29.6% (n=45) of the survey population and only .7% (n= 1) reported living in a community of greater than 50,000 people.

Survey participants were asked to report the number of agricultural education teachers at their school. Over half 51.3% (n=77) only had one agricultural education teacher at their school. Twenty-four percent (n=36) stated there were two agricultural education teachers at their school and 14.7% (n=22) reported having three agricultural education teachers.

Only 4.7% (n=7) of the survey respondents had four agricultural education teachers at their school and 5.3% (n=8) stated their school employed five or more agricultural education teachers.

The final categorical demographic variable was the number of students who tried out for the FFA livestock judging team at their school. Individuals reporting less than five members trying out for their team made up 28.9% (n=44) of the survey population. Over half 52% (n=79) of the survey respondents stated that six to ten individuals tried out for the livestock judging team at their school. Only 8.6% (n=13) reported 11-15 people trying out for their team and 10.5% (n=16) stated there were more than 15 people competing for a spot on their chapters' livestock judging team. Table 1 shows the means and standard deviations of the interval demographic variables.

Table 1

Means and Standard Deviations of Interval Demo^{g}ra^{p}hic Variables

Variable	N	Mean	SD
Age	147	18.20	1.10
Years of Involvement in Livestock Judging	152	3.17	1.14
GPA	148	91.26	5.82

Note: Some surveys (*n* = 155) were missing individual responses.

Pearson's *r* was used to determine the correlation between demographic variables and the team's emblem at the National FFA Livestock CDE. Years of involvement in livestock judging posted a moderate correlation of .407. Prior livestock judging experience had a moderate correlation of .345 along with junior FFA livestock judging experience resulting in moderate correlation of .3 08. There were four demographic variables that produced negative correlations which were: I am best at judging cattle, I am best at judging swine, and the number of members in the survey participants FFA chapter, and the number of agricultural education teachers at the school reported the lowest negative correlation of -.195. Table 2 shows the correlations between demographics and team emblem.

Table 8

Correlations between demographic characteristics and emblem based on total team score

Demographics	Pearson's *r*
Years of involvement in livestock judging	.407
Prior livestock judging experience	.345
4-H experience	.308
Jr. FFA experience	.258
Gender	.235
How many FFA members?	.211
Grade point average	.194
How many students tried out for your livestock judging team?	.186
I am best at judging sheep	.154
Jr. breed association experience	.110
Age	.050
I am best at judging swine	-.04 8
Your school is in what size community?	-.08 1
I am best at judging cattle	-.0 82
How many Ag teachers are at your school?	-.195

The final analysis performed in the study was to analyze the impact of demographic variables in predicting gold, silver, or bronze emblem finish at the 2005 National FFA Livestock CDE. The regression model identified four demographic predictor variables impacting a team's emblem based on total team score at the National FFA Livestock CDE. The number of years a participant had been involved in livestock judging had a positive impact. According to the model if a participant had been involved in livestock judging for four or more years, the *B* value for this predictor variable was 38.14. The model also indicated that male students had a substantial advantage at the 2005 National FFA Livestock CDE. Males had a *B* value of 70.66. A participant with a higher grade point average received a $B = 5.13$ according to the model. If participants reported cattle as their best specie to judge, the model shows them receiving -48.70 as their *B* score. The $R^2 = .321$ indicates that 32.1% of the variance in team emblem can be accounted for by: (1) number of years involved in livestock judging, (2) gender, (3) grade point average and (4) cattle is my best specie to judge. None of the other demographic variables accounted for a significant amount of the variation in team emblem earned at the 2005 National FFA Livestock CDE. Table 3 shows the regression model and reports unstandardized beta coefficients and standard errors along with standardized beta coefficients, t scores and significance.

Table 9

Regression analysis for demographic variables predicting team emblem

Variable	*B*	SE *B*	β	*t*	Sig.
Number of years involved in livestock judging	38.41	8.19	.337	4.70	.000
Gender	70.66	18.90	.268	3.74	.000
Grade point average	5.13	1.66	.220	3.08	.002
Cattle is my best specie to judge	-48.70	18.79	-.184	-2.591	.011

Note. R^2 = .321. Adjusted R^2 = .296. F = 12.86

The regression analysis indicates that the number of years involved in livestock judging in combination with gender and grade point average, had a great impact on participant performance in the 2005 National FFA Livestock CDE. The regression model also tells us that those participants, who perceived cattle as being their best specie to judge, actually were at a disadvantage among this group of participants.

Conclusions, Implications, and Recommendations

Male and female participation in this event was almost evenly split with 50.3% of the participants being male and 49.7% being female. In predicting team emblem, gender posts the highest *B* value in the regression analysis. We must use caution in interpreting this demographic variable. When we look at the profile of the 2005 national winning team, we find the makeup of that team to be two males and two females. This fact supports England's findings from 1996 that gender did not influence team success at a national CDE. Future research is needed to investigate the male advantage in the 2005 CDE to determine if this was a gender issue or a geographic issue.

There is no substitute for experience. The mean score for years of involvement in livestock judging was 3.17. Years of involvement in livestock judging also posted a moderate correlation with team emblem and proved to be a good predictor variable of team emblem in the regression model. These finding are in line with Holt (1929), who found that most successful judging teams usually required a training period of two or more years. England's (1996) study strengthens the argument for experience as a potential success factor. According to her study, most successful judging teams consisted of older students who had some type of judging experience.

Grade point average had some influence on team success at the 2005 National FFA Livestock CDE. The mean score for grade point average across all participants was 91.26. The correlation between grade point average and team emblem was a low positive correlation of .194. The regression model shows grade point average as a significant predictor variable of team emblem. The profile of the national winning team supports this finding by reporting a team grade point average of 95 on a 100 point scale. This is another variable that warrants future study to verify grade point average as success factor for the National FFA Livestock CDE.

On the opposite end of the spectrum, some demographic variables seem to have little or no effect on team emblem in the National FFA Livestock CDE. The size of the community, the number of agricultural education teachers at the school, and students who perceive cattle as their best specie to judge all posted negative correlations as they relate to team emblem. The more successful teams appear to come from towns of populations with less than 10,000 people. Seventy-five percent of teams surveyed reported having one or two agricultural education teachers. Having three or more agricultural education teachers did not appear to be an advantage for teams in the 2005 National FFA Livestock CDE. Students who reported cattle to be their best specie of livestock to judge actually scored lower in the contest. Further research is needed to investigate the impact of these demographic variables on team emblem.

The findings from this study have implications for all agricultural education teachers who train CDE teams. Studying the impact of demographic variables can aid teachers in their recruitment and retention of students who participate in these events. These findings can also be beneficial to extension agents as well as community volunteers who assist in preparing livestock evaluation teams for competition. We must not focus solely on demographics when recruiting and selecting students to be members of CDE teams, but we can use this information to make educated decisions in maintaining and building this integral part of the FFA program.

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