FFA MEMBERSHIP GROWTH COMPARED TO A CHANGING AND GROWING STUDENT POPULATION

BY

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THESIS

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Abstract

This study compares National FFA membership growth to the growth of the overall student population (percentage growth change, PGC) by state and region from 1990 to 2014 using data provided by the National FFA Organization and the National Center for Education Statistics (NCES). Using Ragin's (1987) method of Qualitative Comparative Analysis (QCA), student population growth and demographic changes in student race/ethnicity, locale, and free and reduced-price lunch were compared to FFA membership growth by state and region. The QCA method was also used to measure the effects of the National FFA Organization's affiliation program. The Central Region had the largest increase in FFA membership PGC while the Southern Region had negative FFA membership PGC. Only 6% of states have both high student population growth and high FFA membership measured as a percentage of the student population. Of the states with higher FFA membership percentages, 74% also had larger White student populations, and 89% have larger rural or town student populations. Only one state using the affiliation program had negative FFA membership PGC while 22 states utilizing the affiliation program had positive FFA membership PGC.

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Chapter 1: Introduction

> In this time of controversy over the use of federal funds to support vocational youth organizations, it is essential that vocational agriculture adapt to the needs of the changing times, and that FFA activities, methods and strategies be modified as needed to provide the valuable support to the total vocational agriculture program that it has been in years past (Cooper & Nelson, 1983, p. 10).

Student membership to the National FFA Organization has often been used as an indicator of progress or positive change relative to the challenges of changing population demographics and student interests. As indicated in the previous quote, concerns about the viability of agricultural education with the FFA and the need to adapt are not new nor have they dissipated. The national research agenda for the American Association of Agricultural Education addressed a changing, more urbanized population as a primary challenge to the agenda's top priority: "Public and Policy Maker Understanding of Agriculture and National Resources" (Doerfert, 2011). FFA membership numbers are used in research as a metric to examine agricultural education enrollment growth (Retallick & Martin, 2008). In 1991, FFA membership had been dropping 1 to 3% annually and researchers sought to identify factors that influence a student's decision to enroll in agricultural education programs and join FFA (Hoover & Scanlon, 1991).

In recent years the National FFA Organization has rebounded in terms of FFA membership, surpassing membership records set in the 1970s. The National FFA Organization (2016b) now reports having 649,355 members. While total FFA membership numbers are increasing, so are student populations in many states (National Center for Education Statistics, 2016a). Researchers have identified disparities between FFA members and non-members in

terms of race and ethnicity and rural and urban locale (Lawrence, Rayfield, Moore & Outley, 2013) and have often linked these disparities to the poor image of FFA among non-members (Myers, Breja & Dyer, 2004). As Agricultural Education and FFA adapt to the needs of a changing student population, FFA membership, as an indicator of progress, should be analyzed alongside student populations.

Chapter 2: Review of Literature

Involvement in the FFA Organization is integral to programming in agricultural education. This emphasis is highlighted in several different ways in agricultural education literature. The importance of FFA involvement to agricultural education is found in distinctions made between FFA members and nonmembers in many studies (Bakar & McCracken, 1994; Gliem & Gliem, 2000; Hoover & Scanlon, 1991; Lawrence et al., 2013; Retallick & Martin, 2008; Roberts, Hall, Briers, Gill, Shinn, Larke & Jaure, 2009; Talbert & Balschweid, 2004). Many authors and researchers describe participation in the National FFA Organization as integral to the agricultural education program (Dailey, Conroy & Shelly-Tolbert, 2001; Gliem & Gliem, 2000; Myers et al., 2004; National Association of Agricultural Educators, 2017; Retallick & Martin, 2008; Rose, Stephens, Stripling, Cross, Sanok & Brawner, 2016; Talbert & Balschweid, 2004). Benefits of involvement to students can be found as participation in the FFA has been linked to student career maturity (Bakar & McCracken, 1994), a sense of belonging through the development of self-confidence and self-esteem (Rose et. al, 2016), and the acquisition of life skills such as the ability to work with others (Bird, Phelps, & Henry, 2012). Regardless of all of the benefits attributed to FFA involvement, a significant decline in both agricultural education enrollment and in FFA membership became major concerns in the 1980s and 1990s. Hoover and Scanlon (1991) confirmed these enrollment trends and found that the "overriding barrier to enrollment is image (p. 9)," further stating that, "demographics are changing, the public is losing awareness about the food and fiber system and is rapidly becoming agriculturally illiterate."

In response to concerns about FFA's image as an organization only for those interested in farming, and steadily declining membership numbers, the Future Farmers of America changed its name in 1988 to become the National FFA Organization. The name of the Future Farmer

Magazine changed to FFA New Horizons in 1989. In other evidence of progression, the first African American National FFA President was elected in 1994, and the first National FFA President with a native language other than English was elected in 2003. The organization also created several new award categories and hosted various diversity celebrations in an effort to improve the FFA image as an exclusive organization for White men pursuing careers in farming (National FFA Organization, 2017). In recent years the National FFA Organization has also changed its dues structure with the stated goal of eliminating all individual dues through an affiliation program wherein all enrolled agricultural education students become FFA members (National FFA Organization, 2016a). The National FFA Organization explains the affiliation program's philosophy as involvement in FFA is an integral part of agricultural education and reported that 49.4% of FFA members were part of an affiliated chapter as of August 31st, 2016 (National FFA Organization, 2016a). In support of the program, the National FFA Organization offers several incentives to affiliated chapters such as a lower cost of National FFA dues per member as opposed to those paying traditional dues on an individual, per-student basis (National FFA Organization, 2016a).

Recently there has been much acclaim and celebration by the National FFA Organization as through announcements of all-time membership highs. It was not until 2010 that the National FFA Organization fully rebounded from the decline in membership through the 80's and 90's to break the membership record of 1977 by reporting 520,000 members (Kreul, 2010). It may be worth noting the affiliation program was piloted in 2009. Now the National FFA Organization reports to have to have 649,355 members (National FFA Organization, 2016b). Though this membership growth may be considered impressive, it does not occur in a vacuum.

As FFA membership began increasing in 1990, and continues to increase, so has the student population in the United States. Though membership may be increasing, millions of students may not be receiving the benefits of full membership in the FFA (Roberts et al., 2009, p. 70). This may be particularly true for non-traditional students. One study reported more non-FFA members were also non-traditional students than were FFA members (Gliem & Gliem, 2000). Researchers have utilized changes in Hispanic student enrollment and FFA membership as the first indicator evaluating a series of interventions designed to influence Hispanic student involvement (Roberts et al., 2009). In a stratified national study of 128 chapters from each region, researchers (Lawrence et al., 2013) found that FFA chapter demographics do not closely mirror their schools and communities. This study also concluded that the chapters were more homogeneous than their communities. Bowen (2002) offered a similar critique and challenge stating that enrollment and participation levels should mirror the population levels of the state (p. 10).

One reoccurring theme in studies of agricultural education enrollment and FFA membership spanning several decades is the poor image of FFA to non-members. Study after study of agricultural education programs has recommended changes to the FFA's image. Myers et al. (2004) found eleven studies citing image as a major problem for recruitment to agricultural education and FFA. This issue of FFA image may not be a change in student perception but a change in the demographics of public school students.

Talbert and Balschweid noted that "Both FFA members and non-members reported that reasons internal to themselves were the greatest influencer for enrolling in agricultural class," and recommended further exploration of this phenomenon (2004, p. 39). A recent study suggested differing student perceptions of FFA based on rural, suburban or urban locale

(Lawrence et al., 2013, p. 217). Talbert and Balschweid (2004) found in their national study that non-FFA members enrolled in agricultural education courses, "are not in agricultural education classes because of agriculture or a desire to learn about agriculture, but because of other factors" (p. 39). Bowen (2002) suggested that a decline of FFA membership among African Americans related to a decline in the number of African American teachers. Other studies have cited similar issues of agriculture teacher and FFA advisor race and ethnicity not mirroring that of the student population (Lawrence et al., 2013; Wakefield & Talbert, 2000). Students from different backgrounds in terms of race, ethnicity, and locale may vary perceptions about agricultural education and FFA. These questions of student perception may well be questions about student self-identity as explained in Erikson's (1963) Identity Theory.

Collectively, agricultural education research studies cited above demonstrate the integral nature of FFA membership to the entire agricultural education program as well as the positive benefits of FFA membership for students. Furthermore, FFA membership trends have often been used as a barometer of agricultural education program vitality even in national studies (Cooper & Nelson, 1983; Hoover & Scanlon, 1991; Lawrence et al., 2013). Research spanning several decades has shown both the opportunities and challenges facing agricultural education and FFA in terms of changing student population demographics. The recent surge in national FFA membership does not negate the need to continue to investigate membership and student population trends. Just as Lentz indicated in 1988, it is important that we not only increase the number but also the percentage of students engaged in the program. As the demographics of student populations throughout the United States change in both urban/rural locale, race/ethnicity, and perhaps subsequent changes in interests and values, one might assume relative changes in interests in participating in programs like the National FFA Organization.

Chapter 3: Theoretical Framework

Kitchel and Ball (2014) suggest theory should be used "to articulate and provide rationale behind the relationships between/among variables" for quantitative research in agricultural education where experimental design is not appropriate (p. 196). The underlying question addressed in this study is: How has FFA membership growth compared to overall student growth and demographic changes in the United States? Another way to pose this question would be: How have changing student demographics and trends affected National FFA membership?

One theory linking student demographic changes to FFA membership and agricultural education enrollment is Erikson's (1963) Identity Theory, which is part of his larger Stages of Development theory. Erikson proposed that one of the central tasks of adolescence is identity development vs. role confusion (1963, p. 261-263). Erikson stated, "It is an ideological mind – and, indeed, it is the ideological outlook of a society that speaks most clearly to the adolescent who is eager to be affirmed by his peers, and is ready to be confirmed by rituals, creeds, and programs…" (1963, p. 263). Erikson (1968) further explains that self-identity "emerges from experiences in which temporarily confused selves are successfully reintegrated in an ensemble of roles which also secure social recognition" (p. 211). In essence, social recognition, affirmation, and confirmation by peers are essential to youth and adolescence facing tasks of identity development.

In the review of the literature, we described the struggle with identity and a poor image of the FFA to students who are not members. Erikson's Identity Theory suggests that students may not participate in programs where their identity is not affirmed or where they will not receive social recognition by their peers. Therefore, factors described by researchers ranging from the homogeneity of FFA members and educators (Lawrence et al., 2013; Bowen, 2002; Wakefield &

Talbert, 2000) as well as poor image as perceived by non-members (Hoover & Scanlon, 1991; Myers et al., 2004) could be inhibiting enrollment and even causing decline when Erickson's Identity Theory is applied to this specific context. This study uses Erikson's Theory of Identity as a rationale for changes in student population demographics relative to changes in FFA membership.

Chapter 4: Purpose & Objectives

Changing school demographics in terms of racial and ethnic composition, as well as a rapidly growing student population, may provide many opportunities to increase FFA membership and agricultural education enrollment (Lawrence et al., 2013; Roberts et al., 2009). In order to maintain the viability of agricultural education and the FFA, and to share the many benefits of FFA participation among a diverse and growing student population, it is imperative that national FFA membership growth is measured and analyzed within the context of national student population trends.

The purpose of this study was to compare National FFA membership growth trends to those of the high school student population in the United States. The following objectives were used to guide this descriptive study:

1) Compare National FFA membership growth to the growth in the total public high school population by state, FFA region, and nationally.
2) Compare FFA membership growth for both state and FFA region to changes in race and ethnicity, locale (urban, rural, suburban, and town), and the poverty rate for high school student population.
3) Compare FFA membership growth to the growth in the total high school student population by states using the FFA affiliation program to states not using the affiliation program.

Chapter 5: Methodology

The purpose of this study is to examine the relationship between FFA membership and public high school enrollment. The National FFA Organization provided raw National FFA membership data, segregated by state association, from 1990 to 2014. The National FFA Organization (2016b) claims that only 5% of FFA members report to be in middle school; therefore, this study utilized data provided by the National Center for Education Statistics for public high school enrollment. For regional comparisons, states were grouped into regions as outlined by the National FFA Organization's (2015) Bylaws: Central, Eastern, Southern, and Western. All tabulations and original tables were created with Microsoft Excel®.

This first objective of this study was achieved by calculating the percentage of public high school students for each state that were FFA members for years 1990 and 2014 (National Center for Education Statistics, 2016a). The most recent year available for both data sets is 2014. The lowest year of FFA membership was 1990, following membership decline in the late 70's and 80's. This function can be described as: *P = Total FFA Membership /Total # of Public High School Students* where P is the percentage of public high school students who are also FFA members. This was calculated for each state association; however, Puerto Rico and the Virgin Islands were not included as no corresponding public school enrollment data was available. Additionally, Washington, D.C., student enrollment was not included in the student enrollment counts for Maryland. There are also no FFA members reported for Washington, D.C., by the National FFA Organization. The function: $PGC = P_{2014} - P_{1990}$ where PGC is the Percentage Growth Change, was used to determine the change in P from 2014 to 1990 for each state association. Mean PG was determined for each region, and all 50 states' PGC were used to create a national mean. Similar methods have been used by researchers to determine the percentage of

public high school graduates earning CTE credits (Career and Technical Education Statistics, 2017), to compare percentage change among populations regarding infant mortality rates from 1990 to 2010 (Malloy, 2015), and to measure student population growth percentages and trends related to math-science course credit (Liang & Poelzer, 2016).

Objectives two through four were achieved using Qualitative Comparative Analysis (QCA), specifically the Boolean Approach to qualitative comparison pioneered by Charles Ragin (1987). Ragin describes QCA as a "case-oriented strategy of comparative research" where "cases are examined as wholes – as combinations of characteristics" (p. 16). The objectives of this study combine multiple variables or characteristics in which several may be present all at once and have an effect on one another. In contrast to statistical analysis, QCA can deal with three ramifications of complex causality: equifinality, conjunctural causation, and asymmetric relations (Meurer & Rupietta, 2016, p. 6). Despite being relatively new to social science, researchers have used QCA in at least 533 articles (Meurer & Rupietta, 2016).

For this study, a truth table modeled after Ragin's (1987, p. 96) example was designed using the conditions and outcomes defined in Tables 1 and 2. Each state is considered a case or set. Boolean Minimization was applied to the truth table, and necessary and sufficient causal statements were created based on the data as prescribed by Ragin's (1987) Boolean Method.

Table 1
Titles and Descriptions for Conditions Used in Truth Table Analysis

Title	Description	Condition
S	Student Population Growth	SP growth ≥ 27%
H	Increase in Hispanic SP	PGC of Hispanic SP ≥ 9.36
B	Increase in Black SP	PGC of Black SP ≥ -0.15
W_P	High percentage of SP is White	White % of SP ≥ 62.03
C	Increase in City SP	PGC of City SP ≥ 0.49
Sub	Increase in Suburban SP	PGC of Suburban SP ≥ 4.14
RT_P	High percentage of SP in Rural/Town	Rural/Town % of SP ≥ 41%
FRL	Increase in SP FRL	PGC of SP FRL ≥ 14
PFL	High SP with FRL	SP with FRL ≥ 38%
A	State utilizes affiliation program	Affiliated members ≥ 37%

Note. SP = student population; FRL = free and reduced lunch

Table 2
Outcome Descriptions and Conditions Used in Truth Table Analysis

Outcome	Description	Condition
O_1	PGC in FFA membership increased	PGC of membership ≥ 1
O_2	PGC in FFA membership stayed the same	1 > PGC of membership ≥ 0
O_3	PGC in FFA membership decreased	PGC of membership ≤ 0
O_4	High percentage of SP are FFA members	P_{2014} ≥ 4.87%

Student Population Growth: *S*

The student population growth percentage was calculated for each state as the percentage change in enrollment form 1990 to 2014 using National Center for Education Statistics (2016a) data. The mean of all fifty states was 27%; therefore, this figure was used for the condition.

Race and Ethnicity Data Sources and Conditions: *H, B, and W*

PGC, as explained earlier in this methods section, was tabulated for Black, and Hispanic students, as denoted by National Center for Education Statistics, for the years 1993 and 2013 because data was not available for 1990 and 2014. Racial and ethnic data for 1993 was sourced from National Center for Education Statistics (1995) and ethnic data for 2013 was sourced from National Center for Education Statistics (2015). Maine was excluded from this measure as data for Maine was not available in 1993. Conditions for *H* and *B* were based on mean PGC: the mean PGC for Black students was -0.15; the mean PGC for Hispanic students was 9.36. W_P was

determined by the percentage of the student population in 2013 identified as White by National Center for Education Statistics (2015); the mean percentage is 62.03%.

Locale Data Sources and Conditions: *C, Sub, and RT*

PGC was tabulated for City and Suburban populations, as determined by NCES, for 2003 and 2012 as data was not available for 1990 and 2014. Locale data for 2003 was collected from Provasnik et al. (2007, p. 125), and their data source was also National Center for Education Statistics. Locale data for 2012 was sourced by National Center for Education Statistics (2014). Conditions were based on mean PGC: the mean PGC for City student enrollment was 0.488; the mean PGC for Suburban enrollment was 4.144. RT_P was determined by the percentage of the student population in 2012 identified as Rural or Town (National Center for Education Statistics, 2014); the mean percentage is 41.06%.

Student Poverty Rate Data Sources and Conditions: *FRL and PFRL*

PGC was tabulated for high school students eligible for free or reduced-price lunch, as designated by the National Center for Education Statistics, for 1999 and 2009 as data was not available for 1990 and 2014. Both data sets were collected from National Center for Education Statistics (2011). Arizona and Tennessee were not included because of insufficient data. Because of missing data, 2001 data was used for Idaho and Washington rather than 1999, and data for 2008 was used instead of 2009 for New York. The mean percentage of high school students eligible for free or reduced-price lunch for 2009 (PFL) was 38%.

Affiliation Fee Data Sources and Conditions

The National FFA Organization provided raw membership data for the 2015-16 school year reflecting the affiliation percentage of each state's membership. The National FFA Organization calculates this as the number of members per state from affiliated chapters divided

by the total number of members in that state. Several states are 100% affiliated. The average percentage of members for states where some, but not all, chapters utilize the affiliation program is 37%.

Outcome Data Source and Conditions

The function used for Objective 1 ($PGC = P_{2014} - P_{1990}$) was used for each state to determine if a state was O_1, O_2, or O_3. The mean PGC for all states is 0.996, so a PGC of 1 was used as described in Table 2. O_4 uses the mean of P_{2014} for all states of 4.87%. A state can only be coded as O_1, O_2, or O_3; however, it can be either O_1, O_2, or O_3 and also meet the conditions of O_4.

Affiliation Program and PGC

The National FFA Organization piloted the affiliation program in 2009. Data sets used for Objective 1 (National Center for Education Statistics, 2016a) were utilized again; however, the formula was modified as $PGC = P_{2014} - P_{2008}$, and $PGC = P_{2008} - P_{1990}$. A comparison PGC was made for states utilizing the affiliation fee program, as determined by 37% or greater of their FFA membership belonging to affiliated chapters, to those less than 37%.

Chapter 6: Results

Objective 1: Compare National FFA membership growth to the growth in the total public high school population by state, FFA region, and nationally.

Summary data representing the means for each FFA region and nationally is presented in Table 3. Data for each state, by region, is presented in Appendix A. Nationally there is a mean PGC in National FFA membership from 1990 to 2014 of 0.996. Seventeen (17) states have a PGC above the national mean PGC. Fifteen (15) states have a negative PGC. The state with the highest PGC is Montana with a PGC of 7.93. The state with the lowest PGC is Alabama with -4.89. The average percentage of high school students who were also FFA members, for the fifty states included in this study, was 3.88% in 1990. In 2014, that percentage increased to 4.87%.

Table 3
National FFA Membership Growth Compared to Student Population Growth by Region and Nationally 1990 – 2014

	Member Growth (%)	SP Growth (%)	P_{1990} (%)	P_{2014} (%)	PGC
Central	67.61	15.43	6.51	9.28	2.77
Eastern	61.76	17.52	2.07	2.79	0.75
Southern	46.41	28.92	5.47	5.30	-0.13
Western	65.89	53.56	2.66	3.13	0.47
National	*66.22*	*27*	*3.88*	*4.87*	*0.996*

Note. Each state's membership growth, SP growth, etc., were used to determine means.

Six states (Florida, Idaho, Minnesota, New Mexico, Tennessee, and Washington) increased in total membership from 1990 to 2014 but decreased in PGC. Florida, for example, grew by 6,443 members by has a PGC of -0.11 for the same time period because student population growth outpaced FFA membership growth. Five states had a decreasing student population from 1990 to 2014. West Virginia's membership only increased by 11%; however, the total student population in West Virginia decreased by 19% resulting in a PCG of 1.7.

The Central Region was the only region to have a PGC greater than the national average PCG. With the exception of the Southern Region, membership growth increases were similar ranging from 61.76% in the Eastern Region to 67.71% in the Central Region; however, student population growth was more varied for the same regions ranging from 15.43% to 53.56%. The only region to decrease, overall, in PGC is the Southern Region. The region with the largest percentage of high school students who are FFA members is the Central Region with an average of 9.28% in 2014. The lowest was the Eastern Region with 2.79%.

Objective 2: Compare FFA membership growth for both state and FFA region to changes in race and ethnicity, locale, and poverty rate for high school student population.

Table 4
Truth Table Condition and Outcome Combinations by Region

Conditions		West. (*n*=11)		South. (*n*=9)		Cent. (*n*=12)		East. (*n*=18)		Total (*n*=50)	
		f	%	*f*	%	*f*	%	*f*	%	*f*	%
S		9	81.8	4	44.4	1	08.3	5	27	19	38.0
W_P		3	27.2	2	22.2	10	83.3	10	55	25	50.0
RT_P		3	27.2	7	77.8	11	91.6	6	33.3	27	54.0
W_P+ RT_P (*n=19)*	O_1	-	-	-	-	8	66.7	2	11.1	10	20.0
	O_2	-	-	2	22.2	1	08.3	3	16.7	6	12.0
	O_3	1	09.1	-	-	1	08.3	1	05.6	3	06.0
	O_4	1	09.1	2	22.2	9	75.0	2	11.1	14	28.0
H Sub, *BSub,* or *HBSub* (*n*=19)	O_1	4	36.4	1	11.1	1	08.3	3	16.7	9	18.0
	O_2	-	-	1	11.1	1	08.3	4	22.2	6	12.0
	O_3	1	09.1	-	-	1	08.3	2	11.1	4	08.0
	O_4	2	18.2	1	11.1	2	16.7	1	05.6	6	12.0
H, B, or HB +Sub A (*n=9*)	O_1	4	36.4	-	-	-	-	1	05.6	5	10.0
	O_2	-	-	-	-	1	08.3	3	16.7	4	08.0
	O_3	-	-	-	-	-	-	-	-	-	-
	O_4	1	09.1	-	-	1	08.3	-	-	2	04.0
$C+W_P$ $+RT_P$ (*n*=12)	O_1	-	-	-	-	7	58.3	2	11.1	9	18.0
	O_2	-	-	2	22.2	-	-	1	05.6	3	06.0
	O_3	-	-	-	-	-	-	-	-	-	-
	O_4	-	-	2	22.2	7	58.3	2	11.1	11	22.0

Note. O_1=PGC of membership ≥ 1, O_2 =1> PGC of membership ≥ 0, O_3 =PGC of membership ≤ 0, O_4 =P_{2014} ≥ 4.87%

Truth table condition and outcome combinations are presented in Table 4 and Table 5. Truth table results for each condition and outcome are presented in Appendix B. Regions vary in terms of PGC. Most Central Region states (*n* = 9, 75%) achieved above average increases in PGC of FFA membership (O_1, PGC ≥ 1). Only one state (*n* = 1, 11%) achieved this in the Southern Region. Only one state in the Central Region (*n* = 1, 8%) decreased in PGC (O_3). Most

states in the Central Region (n = 10, 83%) also had a high percentage of FFA membership (O_4, $P_{2014} \geq 4.87\%$). More than half of the states in the Southern Region (n = 5, 56%) also had a high percentage of membership.

Only 16% (n = 3) of the states with above average growth in student populations (S, SP growth ≥ 27%; n = 19) also had high percentages of FFA membership (O_4). Nine states in the Western Region (n = 9, 82%) had above average student population growth (S). Only one state in the Central Region (n = 1, 8%) had above average student population growth.

Only 12% (n = 3) of states with above average White student populations (W_P, White % of SP ≥ 62.03) decreased in PGC (O_3). Of the 19 states with higher percentages of FFA membership (O_4), 74% (n=14) also have larger White student populations (W^P). The Central Region has the most states (n = 10, 83%) with above average White student populations while the Southern Region has the least (n = 2, 22%).

Of the 19 states with higher percentages of FFA membership (O_4), 89% (n = 17) also have larger rural or town populations (RT_P, Rural/Town % of SP ≥ 41%). The Central Region has the most states (n=11, 92%) with high rural populations (RT_P), and the Western Region has the fewest states (n = 3, 27%). Of the 19 states that have both high rural (RT_P) and White (W_P) student populations, 74% (n = 14) also have a higher percentage of FFA membership (O_4). Only three states (n = 3, 6%) with both larger White (W_P) and rural (RT_P) student populations had declining PGC (O_3). In the Central Region, 83% (n = 10) of states have larger rural and White student populations while only one state (n = 1, 9%) in Western Region has this combination. Though 25 states have increasing city populations (C, PGC of City SP ≥ 0.49), half of them (n = 12, 48%) have larger White (W_P) and rural (RT_P) student populations. None of these 12 states decreased in PGC (O_3).

Almost half (n = 23) of all states utilize the affiliation program (A, affiliated members ≥ 37%). Only one of those states (n = 1, 4.3%) decreased in PGC. Of the 19 states with growing Hispanic (H), Black (B), and Suburban (Sub) student populations, 21% (n = 4) decreased in FFA membership PGC; however, no state with growing Hispanic, Black and Suburban population decreased in PGC while also implementing the affiliation program. Of the eight states (n = 8) with growing student populations (S) that did not implement the affiliation (A) program, 5 states (n = 5, 63%) decreased in PGC. Of the twelve (n = 12) states that had growing student populations (S) and used the affiliation program (A), only one (n = 1, 12.5%) decreased in PGC.

The Southern Region (n = 9) and the Western Region (n = 7) comprise 73% of the states (n = 22) with a higher percentage of students with Free and Reduced-Price lunch (PFL, SP with FRL ≥ 38%). 27% (n = 6) of PFL states are decreasing in PGC (O_3) for FFA membership; however, 50% (n = 11) do have higher FFA membership percentages (O_4).

Table 5
Truth Table Combinations and Outcomes for S and A

	S (n=19)		*A* (n=23)		*S* with no *A* (n=8)		*S* + *A* (n=12)	
	f	%	*f*	%	*f*	%	*f*	%
O_1 (n=18)	6	31.6	9	39.1	1	12.5	5	41.7
O_2 (n=19)	8	42.1	13	56.5	2	25	6	50
O_3 (n=13)	5	26.3	1	04.3	5	62.5	1	12.5
O_4 (n=19)	3	15.8	8	34.8	2	25	1	12.5

Note. S = SP growth ≥ 27%, A= Affiliated members ≥ 37%

Objective 3: Compare FFA membership growth to the growth in the total high school student population by states using the affiliation fee program to states not using the affiliation fee program.

Table 6
Comparison of the Affiliation Program on National FFA membership Growth

	P_{1990} (%)	P_{2008} (%)	P_{2014} (%)	PGC 1990 to 2008	PGC 2008 to 2014
Mean for States using Affiliation Program (*A*)	3.54	3.60	4.74	0.05	1.14
Mean for States not using Affiliation Program	3.85	3.83	4.26	-0.02	0.43
National Mean	3.88	3.97	4.87	0.10	0.90

Note. A= Affiliated members ≥ 37%.

Table 6 compares PGC for states participating in the affiliation program to those not participating in the affiliation program. States that have used the affiliation program have an average PGC of 1.14 between 2008 and 2014. States not using the program have a PGC of 0.43 for the same period. Between 1990 and 2008, before the affiliation program began, the national PGC was 0.10. Between 2008 and 2014, after the affiliation program was initiated, the national average PGC is 0.90. States using the affiliation program have a mean PGC more than double that of states not using the affiliation program.

Chapter 7: Conclusions and Recommendations

Caution should be used in interpreting finds through the QCA method; however, the method is appropriate for identifying cases of interest or conditions and variables that are frequently found together or found with specific outcomes of interest. This is a method of frequency, but it does not measure strength of relationship. Though National Center for Education Statistics data was found to be the most reliable for this study, it posed several problems. It would have been best to use data for each condition for the years 1990 and 2014; however, National Center for Education Statistics data for all conditions for those years either does not exist or could not be identified. In those cases, data was used from other years as described in the methods section of this article. In some cases, data from specific states were missing. Those are noted in the methods section as well. This study did not include enrollment numbers for middle schools though there are middle school members in several states. It was determined to not include middle school in total school enrollment counts using National Center for Education Statistics data because the National FFA Organization (2016b) reports that only 5 percent of FFA members are in middle school. Additionally, there are college students but college student enrollment was not included in this study. The National FFA Organization (2016b) reports only 4% of FFA members are in college.

FFA Membership Growth

Though the National FFA Organization has continues year-after-year to have record-breaking membership numbers, the percentage of high school students who are FFA members is only one percentage point more than it was during 1990, National FFA's year of lowest membership after membership began declining in the 70's and 80's. Not every state that increases in FFA membership is really growing. This finding is consistent with Retallick and

Martin's (2008) fifteen-year study in Iowa where student enrollment growth grew more rapidly than FFA membership. Only 16% of the states with above average growth in their student population also have above average percentages of FFA members. It is especially important in these states to review membership growth in comparison to the student population. This study revealed six states with membership increases from 1990 to 2014 where a smaller percentage of high school students are FFA members for the same period. Just as was stated several decades ago, it is the percentage of students engaged that is important (Lentz, 1988).

Regions vary greatly in terms of PGC. With the exception of the Southern Region, membership growth is relatively similar among regions; however, student population growth is not. Average student population growth was 15.43% in the Central Region and 53.56% in the Western Region. The two regions with higher student population growth, the Western and Southern regions, are also the same regions with lower PGC.

Affiliation Program

With one exception, Alaska, it seems that the Affiliation program may be sufficient to keep PGC from declining. Half of the states that increased above average PGC were part of the Affiliation program. The Affiliation program seems particularly important in relation to states with increasing student populations and an increasing Suburban student population. The Affiliation program has increased FFA membership but it has also increased PGC. Only three states in the Southern Region are currently utilizing the program and none of the Southern Region states are fully affiliated. There are 22 states that have above average student populations on free and reduced-price lunch, and all six with declining PGC do not participate in the Affiliation program. Of the ten that do participate in the Affiliation program, five had above average PGC and none had declining PGC. This program appears to be ideal for states with

growing student populations, particularly those that are non-White and have more students on Free and Reduced-Price Lunch.

Ethnicity

As the literature might suggest, states with higher percentage of White students did not decline in PGC with only three exceptions. It is not necessary for a state to have a large percentage of White students to keep PGC from declining, but it is almost sufficient. This condition varies widely be region. Only two states in the Southern Region and three states in the Western Region had higher White student percentages compared to twenty states in both the Central and Eastern regions combined. While increases in Hispanic or Black student populations do not appear to be linked to lower PGC they do not occur frequently in states with higher FFA membership percentages. Only one state had increasing Black and Hispanic populations and maintained a high percentage of FFA membership while not having an above average White student population. While minority race and ethnicity may not deter membership growth, it is still rare in states with larger percentages of FFA membership, particularly with increasing Hispanic student populations. As the literature review might suggest, states with larger White student populations, proportionally, have higher percentages of FFA members and decline in membership less frequently; however, student population demographics are now changing and will continue to change.

Locale

With so much literature regarding the rural and urban FFA programs, increases in City population were not associated with decreasing PGC. Of the 25 states with increasing city population, only five decreased in PGC. No states with an increasing city population and an above average White and Rural population decreased in PGC. Lawrence et al. (2013) posed a

question regarding regional effects on FFA membership by locale, and it appears FFA membership growth and rural or urban student population growth vary by region. All states with an above average rural population in the Western Region decreased in PGC. Of the seven states with above average Rural PGC in the Southern Region, none had above average increases in PGC. The inverse is true for the Central and Eastern regions where 17 states had larger rural student populations, and only two of those states decreased in PGC. Having a larger rural population does not seem to result in proportional membership growth in the Western and Southern regions where the race and ethnicity of the student population are changing more rapidly; however, rural states do grow in membership percentages in the Central and Eastern regions. This may become an important issue, particularly for the Eastern Region, as above average increases in City or Suburban populations occurred in 83% of Eastern Region states.

Student Poverty

With the exception of the implications discussed in the affiliation section, not much was revealed by the two variables related to student poverty. It is noteworthy the two regions with the largest average PGC are also the two regions with a smaller percentage of students on Free and Reduced-Price lunch. The only region decreasing in PGC is the Southern Region, a region where every state has an above average percentage of students on Free and Reduced-Price lunch. The Central Region has the fewest number of states with above average student percentages on *FRL*, and the Central Region also has both the highest average percentage of students who are FFA members as well as the highest regional PGC.

Recommendations

In future studies of FFA membership growth, it will be important to measure FFA membership growth in comparison to the student population. This may also be an important

tabulation to use for awarding membership growth awards to states and chapters. As FFA membership demographics change along with the student population, FFA membership data should be cross-walked with school and community data similar to what was accomplished by Lawrence et al. (2013). With the proper tools and metrics, this can be done for each chapter.

All fifty state associations do not currently use the affiliation program; however, it has been a useful tool in encouraging membership growth, particularly for states and regions facing student population changes. The National FFA Organization should continue the program, and this study supports expanding the affiliation program, particularly in the Southern Region.

This study reviewed ten variables through a qualitative comparative analysis; however, there is a need to continue this study with more variables. Several other factors may affect PGC not included in this study such as the size of the state's agricultural economy, the number of FFA chapters, the state spending per pupil, etc. A future study similar to this study should be conducted comparing FFA members to the number of students enrolled in agricultural education; however, existing data regarding agricultural education enrollment on a national level is lacking, often includes duplicate numbers, and may not be as accurate as the National Center for Education Statistics data used for this study. Much of the research in Agricultural Education and FFA is regionally or locally focused. It is important to conduct national studies, like this study, in order to unearth particular cases of interest.

This study revealed several cases that merit further research. Only one state in the Southern Region, Georgia, is growing FFA membership as a proportion of the student population. Delaware's growth also merits attention in the Eastern Region. Student populations are dramatically changes in the Western and Southern Regions. States that have decreased

significantly in PGC also merit closer research in order to identify state specific variables that measure strength of relationship rather than frequency.

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Appendix A: FFA Membership Growth for All States

Table 7

FFA Membership Growth & Student Population Growth by State 1990 – 2014

State	Member Growth (%)	SP Growth (%)	P_{1990} (%)	P_{2014} (%)	PGC
Western Region					
Alaska	-2.48	32.49	0.42	0.31	-0.11
Arizona	249.06	101.67	1.79	3.10	1.31
California	143.44	45.95	2.44	4.08	1.63
Hawaii	-63.44	4.57	0.85	0.30	-0.55
Idaho	34.19	46.83	5.36	4.90	-0.46
Nevada	304.83	158.77	1.13	1.76	0.64
New Mexico	3.83	4.80	3.48	3.45	-0.03
Oregon	49.13	35.07	2.81	3.11	0.29
Texas	134.82	66.06	5.31	7.51	2.20
Utah	107.12	47.61	2.48	3.48	1
Washington	9.86	45.39	3.22	2.43	-0.79
Mean	*65.89*	*53.56*	*2.66*	*3.13*	*0.47*
Southern Region					
Alabama	-34.97	12.78	11.54	6.65	-4.89
Arkansas	16.27	14.84	10.20	10.33	0.13
Florida	58.51	66.34	2.24	2.13	-0.11
Georgia	270.78	65.26	3.47	7.79	4.32
Louisiana	9.05	-4.01	4.57	5.20	0.62
Mississippi	-43.75	4.53	5.11	2.75	-2.36
North Carolina	47.61	47.03	4.48	4.50	0.02
South Carolina	73.55	27.41	2.48	3.38	0.90
Tennessee	20.64	26.06	5.15	4.93	0.22
Mean	*46.41*	*28.92*	*5.47*	*5.30*	*-0.13*
Central Region					
Colorado	121.44	64.87	1.71	2.30	0.59
Iowa	70.11	5.15	6.28	10.16	3.88
Kansas	71.67	21.05	4.40	6.24	1.84
Minnesota	20.56	25.27	4.15	3.99	-0.16
Montana	176.07	0.23	4.52	12.45	7.93
Missouri	91.68	17.91	5.91	9.61	3.70
Nebraska	57.40	18.55	6.24	8.29	2.05
North Dakota	20.76	-7.24	11.94	15.54	3.60
Oklahoma	43.60	19.08	12.27	14.80	2.53
South Dakota	34.66	8.24	8.83	10.98	2.15
Wisconsin	28.48	14.57	6.53	7.32	0.79
Wyoming	74.85	-2.51	5.39	9.67	4.28
Mean	*67.61*	*15.43*	*6.51*	*9.28*	*2.77*

Table 7 (Continued)

FFA Membership Growth & Student Population Growth by State 1990 – 2014

State	Member Growth (%)	SP Growth (%)	P_{1990} (%)	P_{2014} (%)	PGC
Eastern Region					
Connecticut	150	37.03	1.02	1.86	0.84
Delaware	319.08	42.69	3.76	11.04	7.28
Illinois	54.57	22.31	2.22	2.80	0.59
Indiana	51.98	13.59	2.60	3.49	0.88
Kentucky	25.62	8.30	6.46	7.50	1.03
Maine	173.68	-5.92	0.32	0.92	0.61
Maryland	52.98	34.37	0.83	0.94	0.11
Massachusetts	148.46	25.22	0.34	0.67	0.33
Michigan	42.48	10.98	1.11	1.42	0.31
New Hampshire	-34.46	25.85	1.59	0.83	-0.76
New Jersey	84.27	35.10	0.47	0.64	0.17
New York	-9.95	9.91	0.57	0.46	-0.10
Ohio	57.07	0.37	3.07	4.81	1.74
Pennsylvania	67.18	10.32	1.54	2.33	0.79
Rhode Island	-57.01	14.82	0.60	0.22	-0.37
Vermont	-3.40	8.02	1.89	1.69	0.20
Virginia	-21.75	41.05	4.16	2.31	-1.85
West Virginia	10.84	-18.71	4.67	6.37	1.70
Mean	*61.76*	*17.52*	*2.07*	*2.79*	*0.75*

Discrepancies are the result of rounding. These numbers were transferred rounded to 2 decimal places.

Appendix B: Truth Table Results for Conditions and Outcomes

Table 8

Truth Table Results for Each Condition and Outcome (f)

	S	H	B	W_P	C	Sub	RT_P	FRL	PFL	A
Western (11)	*9*	*9*	*6*	*3*	*4*	*7*	*3*	*7*	*7*	*7*
O_1 (4)	4	4	2	1	0	4	0	2	3	4
O_2 (2)	2	2	2	1	2	0	0	2	1	2
O_3 (5)	3	3	2	1	2	3	3	3	3	1
O_4 (2)	2	2	1	1	0	2	1	1	2	1
Southern (9)	*4*	*4*	*2*	*2*	*6*	*5*	*7*	*6*	*9*	*3*
O_1 (1)	1	1	1	0	0	1	0	1	1	0
O_2 (5)	2	2	1	2	4	3	5	3	5	3
O_3 (3)	1	1	0	0	2	1	2	2	3	0
O_4 (5)	1	1	2	2	3	3	4	3	5	2
Central (12)	*1*	*4*	*9*	*10*	*9*	*3*	*11*	*3*	*2*	*6*
O_1 (9)	0	3	6	8	8	1	9	3	2	4
O_2 (2)	1	1	1	1	1	1	1	0	0	2
O_3 (1)	0	0	1	1	0	1	1	0	0	0
O_4 (10)	0	3	7	9	8	2	10	3	2	5
Eastern (18)	*5*	*7*	*13*	*10*	*6*	*9*	*6*	*8*	*4*	*7*
O_1 (4)	1	1	4	3	2	3	2	3	3	1
O_2 (10)	3	4	7	6	3	4	3	4	1	6
O_3 (4)	1	2	2	1	1	2	1	1	0	0
O_4 (2)	0	0	2	2	2	1	2	1	2	0
Totals (50)	*19*	*24*	*30*	*25*	*25*	*24*	*27*	*24*	*22*	*23*
O_1 (18)	6	9	13	12	10	9	11	9	9	9
O_2 (19)	8	9	11	10	10	8	9	9	7	13
O_3 (13)	5	6	5	3	5	7	7	6	6	1
O_4 (19)	3	6	12	14	13	8	17	8	11	8

Table 9

Outcomes by Combination

	O_1 (*n*=18)		O_2 (*n*=19)		O_3 (*n*=13)		O_4 (*n*=19)	
O4	*f*	%	*f*	%	*f*	%	*f*	%
(*n*=19)	13	72	4	21.1	2	15.4	19	100