"Where have all the young men gone?"
Exploring the AAAE National Supply and Demand Dataset

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Introduction

The National FFA (2023) reports more than 43% of membership is female, 49.8% is male, .6% nonbinary, and 6.4% undisclosed. Such numbers suggest that FFA members, who are a critical component of school-based agricultural education (SBAE) programs, are more likely to be male. Research (Anderson & Paulsen, 2023: Sansone, 2017; Saucier & McKim, 2011; McKim, et al, 2018) supports the notion that gender is not evenly distributed among subject areas of SBAE. Relative to gender, enrollment in some SBAE content areas reflects broader trends in education and the workforce, with varying participation rates across disciplines. One study (Anderson & Paulsen, 2023) revealed that gender may influence self-efficacy, which in turn affects the perceived competence to teach certain subjects, such as agricultural mechanics. Sansone (2017) found that gender also impacts STEM instruction. However, he found teacher beliefs mattered more than teacher gender, suggesting awareness of gender trends is important.

A case study in California showed that while gender parity of the SBAE teaching population occurred in 2011 (Spiess, 2016), the number of female teachers has continued to increase, to approximately 65% of the SBAE workforce at present (AET, 2023). In fact, 75% of program completers (PC) reported by California agricultural education teacher preparation programs in 2023 were female (Foster et. al. 2024). Spiess (2016) found significant gender differences relative to teacher attrition between 6-10 years teaching, presenting the possible implication that as the gender ratio of teachers changes, the attrition rate would also change. However, Sorensen, McKim and Velez (2016) found no significant difference between genders when examining attrition related to family factors. Given that attrition rates impact teacher demand, understanding related gender trends is important to predicting, and preparing for, future teacher demand.

Conceptual Framework

The conceptual framework for the National Supply and Demand (NSD) study (adapted from Lyndsey et al., 2009) identifies factors contributing to SBAE teacher supply and demand. This research explores the effects of the supply side of the model provided by license ready program completers (PC) and the effect of teacher attrition on the demand side. This analysis sought to answer the following questions: 1) What is the national gender trend for program completers?; 2) What is the national gender trend for practicing teachers?; and 3) What is the national trend for teacher attrition rates, and are rates correlated with gender changes?

Methods

The NSD study utilizes a census survey of agricultural education state staff and faculty contacts at agricultural education teacher preparation programs. The NSD study collects gender data on both SBAE teachers and PCs. Response rates for state staff, providing demand data, average 90% and 88% for teacher preparation programs, providing supply data (Foster et. al. 2024). This analysis examined gender data for both SBAE teachers and PCs from 2015 to 2023. Since response rates vary, data were normalized and reported as percentages. Due to the binary nature of the data (male and female), one group is a mirror of the other. Female gender was used in the analysis. Attrition was calculated as the number of teachers leaving per 1000 total teachers. Nonbinary gender data was excluded since reported teachers and PCs were <0.06% of

the totals. Regression analysis was used to examine the trend of female teachers, female PCs, and attrition rates. A correlation analysis was used to examine the relationship between female teachers and teacher attrition rates. Data analysis was performed using Microsoft Excel.

Results

The trend for PCs is clearly flattening at about 75% female (Table 1). The trend for SBAE teachers shows a steady increasing percentage of female teachers, which is likely to continue for some time. Gender parity was reached in 2020. The difference between the two groups is narrowing. Attrition rates are variable and non-linear over the study period. Attrition rates have been increasing over the past 5 years. The correlation between female SBAE teachers and the attrition rate over the last 5 years was 0.79 (P>.05) suggesting that other factors may be important.

Table 1 (abbreviated)

	Teachers		Program Completers			
Year	% Female	% Male	% Female	% Male	Difference	Attrition Rate
2015	41%	59%	67%	33%	26%	7.7%
2017	45%	55%	69%	31%	24%	5.6%
2019	48%	52%	74%	26%	26%	4.3%
2021	52%	48%	76%	24%	24%	6.5%
2023	53%	47%	80%	20%	26%	10.8%
Slope	0.019	-0.019	0.0146	-0.0146		0.0198
R^2	0.97	0.97	0.83	0.83		0.88**
2025*	58%	42%	82%	18%		23%

* Linear projection. ** Last 5 years.

Conclusions/Implications

Data indicates the PC gender gap is continuing to increase. Linear projection (trend) estimates that female PCs will grow to 82% by 2025. Could this be modified by actively recruiting more men into teacher preparation programs? Given that many SBAE teachers have prior FFA experience, and more than half of FFA members are male, we must seek to understand and address factors that may prevent male FFA members from considering agricultural education as a career. Female SBAE teacher numbers continue to climb as well. Linear projection estimates that female SBAE teachers will comprise 58% of the workforce by 2025. There are many causes for attrition, including leaving teaching for industry and retiring. The correlation coefficient of .41 is not strong. Some factors, such as retirement, are not expected to be gender neutral as older teachers are more likely to be male. Additionally, the study period does include COVID-19 years which have an unknown effect on attrition and PC numbers. On average, 74% of PCs enter SBAE (Foster et.al., 2024), however it is unknown if there is a gender difference in this rate. PCs make up an average of 55% of new hires between 2014-2023; little is known about the remaining 45%, but it should not be assumed that this group of is gender balanced. Additional research should explore the demographics of non-PCs. Sansone's observation suggests that teacher beliefs about gender are important. While teacher preparation programs cannot change student gender, programs can address students' beliefs. Little is known about the impact of teacher gender on the desire to teach specific subject areas (e.g. animal science) or interest in SAE. The rapidly changing gender demographic could have profound implications for delivery of SBAE.

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