The Changing Roles of Women in Agriculture

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UNIVERSITY HONORS PROGRAM

SENIOR PROJECT - APPROVAL

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College: Agriculture Department: Ag Economics

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PROJECT TITLE: The Changing Roles of Women in Agriculture

I have reviewed this completed senior honors thesis with this student and certify that it is a project commensurate with honors level undergraduate research in this field.

Signed: [Signature], Faculty Mentor

Date: 5/5/04

Comments (Optional):
The Changing Roles of Women in Agriculture

Jenni Maynor
University Honors Program
Spring 2004
Hypothesis

This study was done to see if over the time frame between 1988 and 2002 one could see an increase in the number of women enrolling in the college of agriculture. In preparing to do this study all the information was translated into percentages to be more accurate. This allows for the increasing college enrollment in general. What was expected was that there would be a clear increase over time, and a shift in which the majors that women were enrolling in. It was expected that the female students would change from traditional majors to more nontraditional like agricultural engineering or business.

Executive Summary

After reviewing the data in various formats, it is determined that the hypothesis is incorrect. There are no consistent increases in the number of women enrolling in the college of agriculture. Some majors have seen enrollment spikes, but the increase did not last. One major even saw a consistent decrease of enrollment over the end of the data time frame. There are many possible outside factors that could contribute to these data results that were not considered by this study. One could look to the economy to explain some of the trends in the
enrollment process as well as possibly even the politics of the time. However, one interesting thing was discovered in this study. There are two distinct groups of majors that show no signs of intersecting. One group has consistently had higher enrollment and the other group is always lower. This study is also limited by the fact that it only looks at majors that were offered over the entire time frame. There have been additions and removals of majors during this time that were considered. This could be explanation for some of the drops or increases in similar majors to those that were gained or lost.

Explanation of Findings

After reviewing the results, it has been decided that the best way to view and read them with the most understanding would be to see each major individually. Then see them all collaboratively at which time the two groups become apparent. In the following pages there will be a major listed with an explanation of trends and finds or thoughts followed by a graph representing the data collected for that major. At the very end of the paper there is also a graph showing all majors considered combined to see how they correlated to one another.
Agricultural Economics and Business

In 1988 there was only one student enrolled in this major, and it was a male. By 1989 this major had already taken off in popularity with students and women. It continued to grow consistently until 1995 when the enrollment of women took a very steep drop. The major as a whole took a hit in 1994 from having 75 students in 1993 and dropping to 56 in 1994. The percentage of women in the major recovered completely and even grew slightly by the next year, 1996. Women increasingly enrolled in the economics program until 1999 at which point it began to slowly decline. The last point on this graph is the average of the time frame, not a recovery point for women in this major. This is one of the areas that one needs to look for outside factors contributing to the decrease of enrollment. This is an area in which the hypothesis thought the evidence of increased enrollment would be the strongest. To make one point clear, the total enrollment in the major of agricultural economics and business has not decreased just the number of women. Since 1994 when the major hit its slump it has been steadily recovering as a whole. However it seems that it is male students leading the growth of the major.
Agricultural Education

This is another major that was surprisingly opposite of what the hypothesis predicted. It was thought that there would be a decrease in the percentage of women enrolling in the education field and broadening their base in more male dominated careers. This was the case in the major between 1989 and 1994. 1994 was the lowest percentage of enrollment of women, but starting in 1995 this major has seen growth with the exception of 1997 when there was a small dip. By 2002 the major was made up of nearly 60% women. After viewing the results, they do make more sense. Earlier women were not a part of the agriculture industry except in the home. They were teachers, but not in technical areas. As the opportunity for them to come into the industry became available, they have been and continue to enter in areas that they feel the most comfortable, like education. These results should not have been quite as surprising as they were when the outside factors are considered. It would be interesting to look at how successful these females are in their work environment compared to their male counterparts. At the University of Tennessee College of Agriculture there is still a major of male professors. The initial influx of females will most likely be seen at the high school level and in agricultural extension work.
Animal Science Vet Option

The area of veterinarian medicine has seen tremendous growth in the female population. So there is no shock in seeing high percentage levels of females enrolled in this basically pre-vet option. This major experienced a time of levelness. Then around 1996 began a very fast growth trend, which hit its peek in 1998. Starting in 1999 there was a slow decline, until 2002 when the major started another upward trend. Some of the negative direction of this major could be explained by its extreme cost and time to complete with a relatively low pay scale to help students repay their loans. Students that graduate have relatively easy time with job placement; it just does not initially offer the money they expected or in some cases need.

By choosing this major it needs to emphasized that students do not have to want to go to vet school but most do. Also students do not have to go this route in their undergraduate studies to get into vet school. This is a major designed to help students better prepare and develop a solid foundation to support them if they choose to go on to post graduate studies like vet school. This trend has been showing on a national level, not just at this university.

This major appears to have relatively successful throughout the entire time period studied. With the exception of 1988, every year has had over 50% of enrollment being female. This is a statistic that the college and animal science department can be very proud of.
Agricultural Engineering

This major had one of the most erratic patterns of enrollment of any of those examined. There was little to no pattern apparent. This one was a little interesting due to the fact that the major changed names around 1998-1999. Therefore the data was listed under two different areas. The only sign of steadiness in the major is during the time frame of 1999-2002. These three years are when the major officially took its new name. It also was three of the lowest years of enrollment as well. This is an area that in the hypothesis was again expecting to see an increase in the female enrollment. It was not completely incorrect. The overall average of females over the time frame saw around an 8% increase, and only once did it drop below the starting figure from 1988. So in general the hypothesis is correct, but there is nothing really stable saying this will be the trend in the future or was the trend of the past. The variance between 1992-1993 is the most extreme. There are most likely outside contributing factors like the economy or job placement. In the college as a whole this is a growing major. The college must feel it has a future because they recently completed a new up to date building with high tech labs for agricultural engineering. It is hard to believe the college would spend that amount of money if they were not certain they and their students would not benefit greatly from the new resources that are now available.
Food Science and Technology

Similar to agricultural engineering, this major also shows very inconsistent patterns. However, they are not to the extreme of the engineering students. Between 1989 and 1995 it seems for the most part there was a decline developing for females enrolling in Food Science and Technology. In 1996, the major saw a large percentage increase in enrollment from around 35% in 1995 to just over 65% in 1996. From 1996 through the rest of test period enrollment stayed above 60% for females. Food Science and Technology is one of only three majors that can say over a majority of students enrolled are female. It has the distinct honor of having the highest average overall with 62.68% of students enrolled over this 15-year period being female students. This fact is partially why it was surprising to see the decline of enrollment during the earlier years of this information. This major maybe another area that females feel comfortable making and entrance into agriculture. Females are suppose to know about food and cooking, and they would know what types of things would be better conveniences. Also this major recently added a pre-professional program. Students in this major can go on to dental or even medical school and have a strong foundation. One example of how females might be more interested in this major is to find solution to on going problems like figuring out how to get produce to last longer after purchase. These remarks are not meant to be sexist, and are purely a speculative attempt at explaining the results that were found during this study.
Animal Science

Animal Science was one of the elite few majors that were studied to show definite trends in any direction. In this case it was a positive growth trend for females enrolling, which is not a real surprise after the data that were found in the Animal Science Vet Option major. Unlike the Vet Option the basic Animal Science major never saw a negative trend. There are few years when enrollment was less than the previous year, but there was not two years in a row when the major saw reduced enrollment. Since 1997, there has not been a negative trend in this enrollment. This major placed third in overall average female enrollment, which was a little surprising. With the growth trends on the graph it was expected to finish in the top position. However Food Science and Technology’s consistency made a tough barrier to overcome for the top spot. This was the type of trend that was expected in several of the other majors as well, but this is the only place it truly played out. This is the major when most people not involved in the agriculture industry think of when told someone is majoring in agriculture. It appears they have a pretty good chance of being right in this assumption but not always.
Forestry

This is the only other major that had a distinct trend. Unfortunately this trend did not move in the direction desired. In the Forestry major there has been a steady decline in the percentage of women enrolling. According to the data collected from University of Tennessee Resources show that the major as a whole has seen a decline since 1995. This is based off raw data and does not even consider the general growth rate of the overall university during this time frame. This is another major where money maybe the motive. Many Forestry majors go to work in government position for the Parks and Recreation or Forestry Service. They do not have the best pay scale for the amount of work expected or needed to do their job well. Also in some areas they may not have job security. In Tennessee over the past few years we have seen our state parks closed, which means at least part of that staff was reduced or had to relocate. All of these are factors that play into choosing which major is right for an individual. A growing number of students have family when they enter college, which means they have to consider what is best for everyone. Also relocation may not even be a possibility for some students, and that can really restrict what areas students can study.
**Ornamental Horticulture and Landscape Design**

This is a major that appears to have had some hard times in the earlier part of the studied time frame, and it never completely recovered. Toward the later half there were some small steps toward recovery, but not enough to get back to the starting point, much less enough to say there has been growth among the female population. However, it appears according to the data that the male counterparts in this major have experienced trends of growth in both percentages and raw data numbers. If one only looks at raw data without changing to percentages, the females had some increase in numbers. The data apparently look so negative because the females did not keep up the growth rate of the males. This is one of the largest majors in the College of Agriculture. During this 15-year period over 2,200 students have come through the Ornamental Horticulture and Landscape program, which is the highest of the majors considered in this study. Only around 600 of these students were female. Several students have used this program as an opportunity to start or expand their own Horticulture and Landscape businesses. Others have used it to get into the lucrative business of turf grass management. The desire for the program is definitely among students, but it is apparently more highly sought by males than females.
Plant and Soil Science

The Plant and Soil Science major is another area with some erratic patterns in the early part of the studied time period. There was a drastic fall in the percent of females enrolling between 1989 and 1990, but by 1992 it had more than recovered. Then in 1993 it took another strong dive. Starting in 1994 things began to become more stable and show continuous growth until 1999. The male counter parts had growth until 1995 at which point they start a continuous downward slope that may have began to recover at the very end of the studied time frame. Female student enrollment started another downward trend for 2001 and 2002. This would be an interesting major to continue to watch over the next five years or so to see if it shows signs of a stronger recovery. It is an area where there are several job opportunities and several internships are available each semester for students in this area. This again may be one of those areas that one needs to look at outside factors for explanation. Due to time restraints that was not possible in this particular study. It would be interesting to know what the unemployment rate was during these major swings as well as if any major scientific research related to the areas had been recently made public. This is an area when the hypothesis was developed there was no preset opinions. The percentage average is just slightly higher than the percentage in 1988. It could be said but not with strong confidence that there are signs of growth in this area.
Wildlife and Fisheries

In Wildlife and Fisheries there are signs of positive growth throughout a majority of the time frame. It was somewhat of a shock considering that this is a major similar to Forestry, which had a much bleaker look to its data. With the exception of a couple of years this major showed continuous growth until 2002 when it took its only steep drop. At least that is what is shown with percentage data. When viewing raw data the number of males and females enrolling both began to drop a few years sooner than the graph shows. When the data for the College of Agriculture enrollment as a whole was looked at, it shows drops in the total enrollment (males and females) of the college around the same time the raw data shows decreases. The data was originally changed to percentage to account for growth in the college and the university, but it seems to give a more positive outlook if there is an overall decrease. It would be nice to know why there was the steep drop. The college enrollment partially explains it, but not to the extent of the decrease that there was. Another reason that the enrollment may have dropped is that there was a trend of females wanting to be Park Ranger, but then they found out there was not jobs available. The cause could be similar to Forestry in the fact that the jobs are predominately government with long hours and little pay. This is another area that could be affected when state parks close, and again one must remember the relocation factor.
All Majors Considered

At first glance this graph appears to be a jumbled mess. It was originally made just because it was easy since all the data were already available. After looking at it something significant did show up that otherwise might have been missed. It appears there are two distinct groups among the ten majors that were considered. The higher group of three and the lower group containing the other seven do not look like they will intersect anytime soon. They did not intersect at any point during the studied time frame. The upper three are Animal Science, Animal Science Vet Option, and Food Science and Technology. These have been called the front-runners through out this entire data set, but it was interesting that they never intersected with the other seven majors. There is no clear explanation of why the data worked out this way, but it is probably reasons discussed earlier like job placement and growth in the area as the comfort zone for females.
Conclusion

Though the data was not exactly what was expected it was still interesting. There were areas that growth and expansion were evident and will probably continue to show more predominantly in the next few years. There were a couple of areas that saw signs of declining trends, which was completely unexpected. Most of the majors with the exception of Forestry did have higher averages than the beginning year of 1988, but many experienced times of negative trends. It was not the outcome expected, but it was still interesting to know. It may help others have a basis for more detailed studies that can take the time to look at more of the outside factors that can more concretely explain the trends discovered. It could also be interesting to others in the College of Agriculture that have not seen the data specifically for females or broken down in this manner. More than anything this project was interesting to work on and offered the opportunity to use the knowledge gained while studying at the University of Tennessee.
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Bibliography

University of Tennessee College of Agriculture Enrollment Records
All of the raw data which was used to help build the graphs in this report
Came from the above listed source. Also any reference to enrollment numbers
Was also from this report.

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