

Mathematics at Hood College and in the
United States,
1986-2011

by

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In early February of 2012, David Bressoud published a disturbing find: “the number of women majoring in the mathematical sciences has continued to stagnant while the number of men” [1] has risen steadily. Hood College offers the uncommon demographic having a population of approximately 66% women[11], as opposed to the 57% of women earning degrees in the United States [4]. Because of this, I studied the concentration of women receiving degrees in mathematics from Hood College in contrast with the concentration of women receiving degrees in mathematics from all universities and colleges in the United States to see if there was a similar distinction.

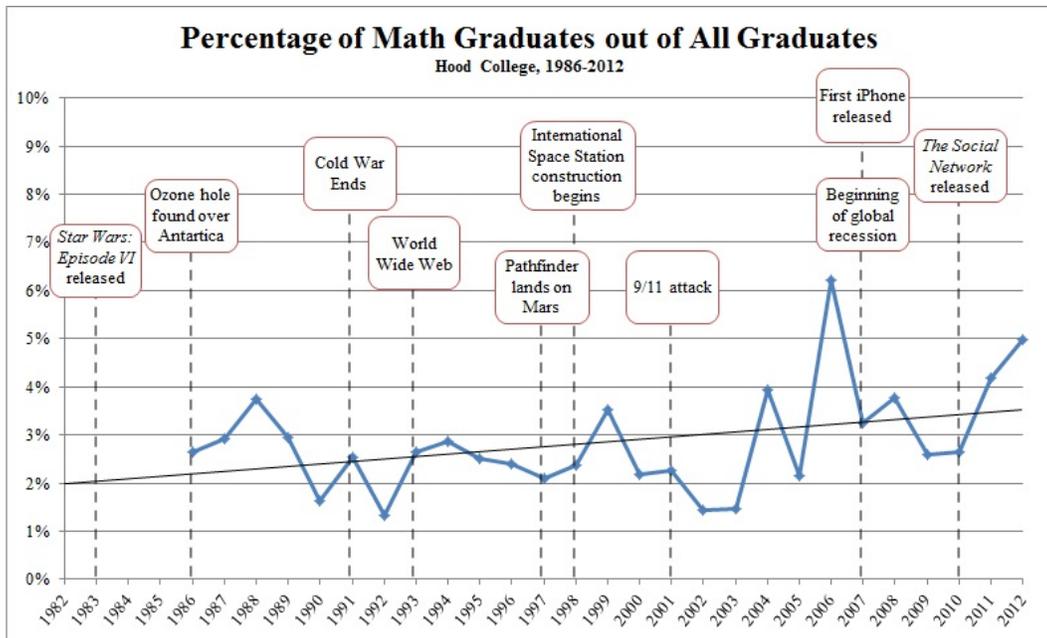


Figure 1: Timeline of Hood College Math Graduates in Relation to World Events

I first looked at the men and women earning degrees in Mathematics at

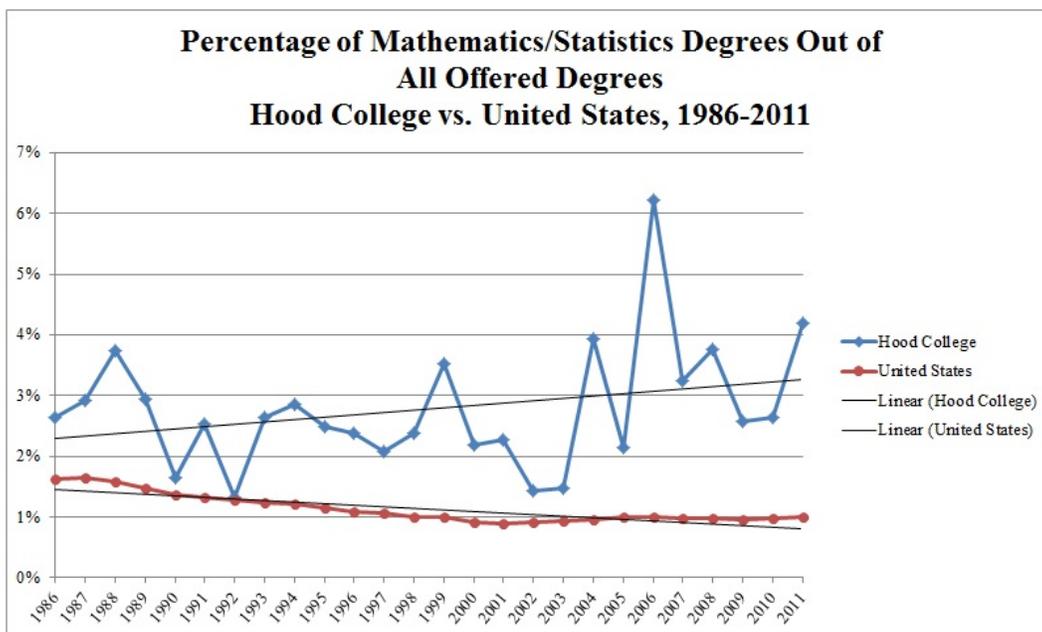


Figure 2: Mathematics Majors at Hood College and the United States

Hood College from 1982-2012 (see Figure 1) and compared these numbers [8] to national and international events [2]. Although no definite causation can be proven, there are some relations between significant social and scientific events and spikes in mathematics degrees earned. For example, two years after the ozone hole over Antarctica is discovered, the percentage of degrees in mathematics jumps from 2.63% to 3.73%. Since the 9/11 attack, there has been an overall upwards trend in mathematics degrees earned. The percentage of mathematics majors at Hood College is on a definite rise. Unfortunately, the percentage of mathematics majors in the United States is on a decline (see Figure 2). Hood College awarding a higher percentage of mathematics degrees than that of the United States. This is wonderful news

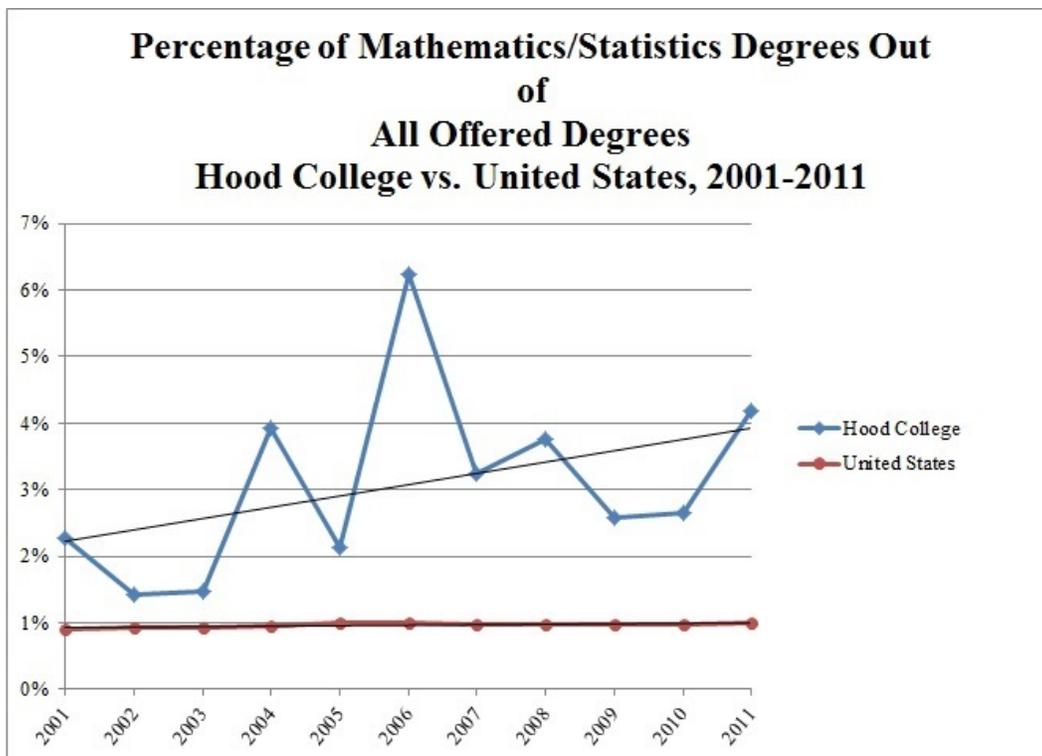


Figure 3: Mathematics Majors at Hood College and the United States

for Hood College, but rather unfortunate for the country. This may be due to Hood College having a graduate program in mathematics. Colleges with graduate programs in mathematics have seen an increase in math majors, while those that only offer a bachelor's degree are seeing a sharp decrease in their math graduates [1].

There is one other event that happened in 2001 that is not in Figure 1. In that year, Hood College began allowing men to live on campus instead of just commuting to the college. Since then, the percentage of students graduating with mathematics degrees as increased drastically at Hood College (see

Figure 3. This may be due in part to 9/11 attack, which most likely caused the slight upwards trend in math degrees in the United States as well.

I then looked at the women receiving degrees in mathematics. As seen in Figure 4, there is a shocking decline of women receiving degrees in mathematics at Hood College out of the total number of mathematics degrees earned.

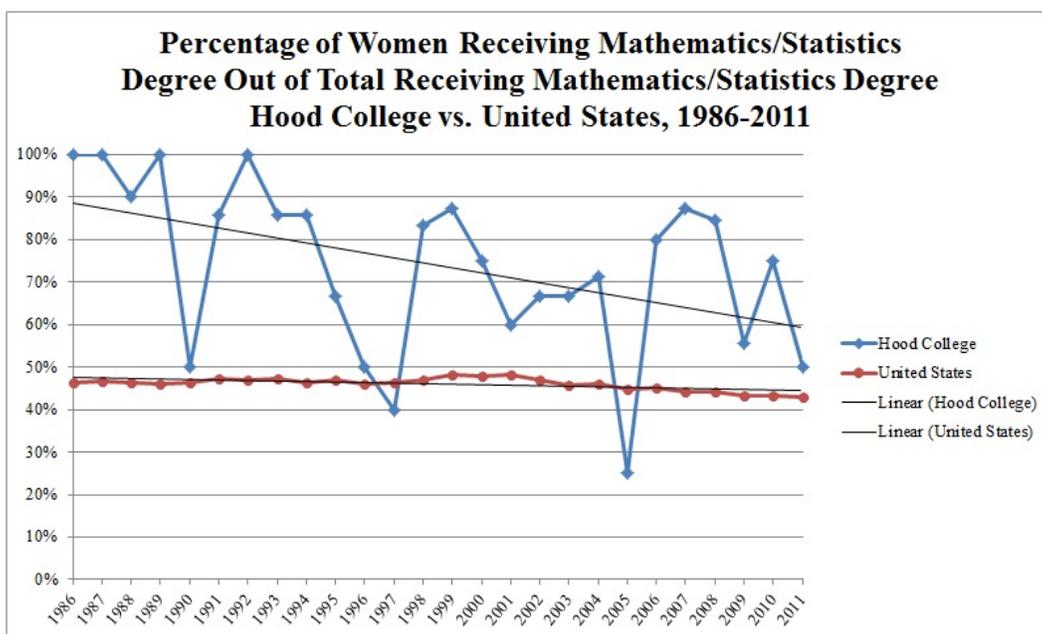


Figure 4: Mathematics Majors at Hood College and the United States

However, with only a few exceptions, there are still more women earning mathematics degrees at Hood College than men. Surprisingly enough, although the percentage of women earning degrees in mathematics is declining at Hood College, the percentages are still higher than those earned in the United States in every single year. This is most likely due to there being

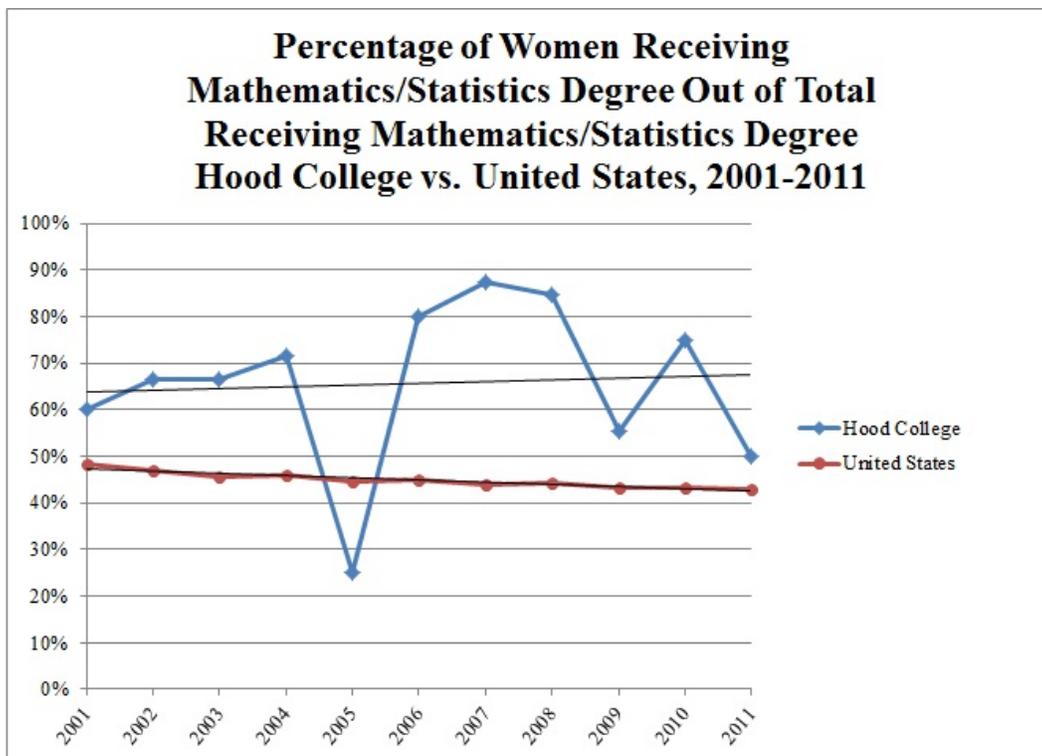


Figure 5: Male and Female Mathematics Majors from Hood College

a significantly higher percentage of women earning degrees at Hood College than across the United States. In the years 2001-2011, of all bachelor degrees earned, an average of 57% of these degrees have been awarded to women. In fact, across the entire timeline, from 1986-2011, women have earned a minimum of 51% of the degrees awarded throughout the United States each year[4]. However, because 66% of the population at Hood College is female, more women earn degrees than men, which leads to an average of 74% of those earning math degrees at Hood College being women.

Since 2001, the percentages of women graduating with a degree in mathe-

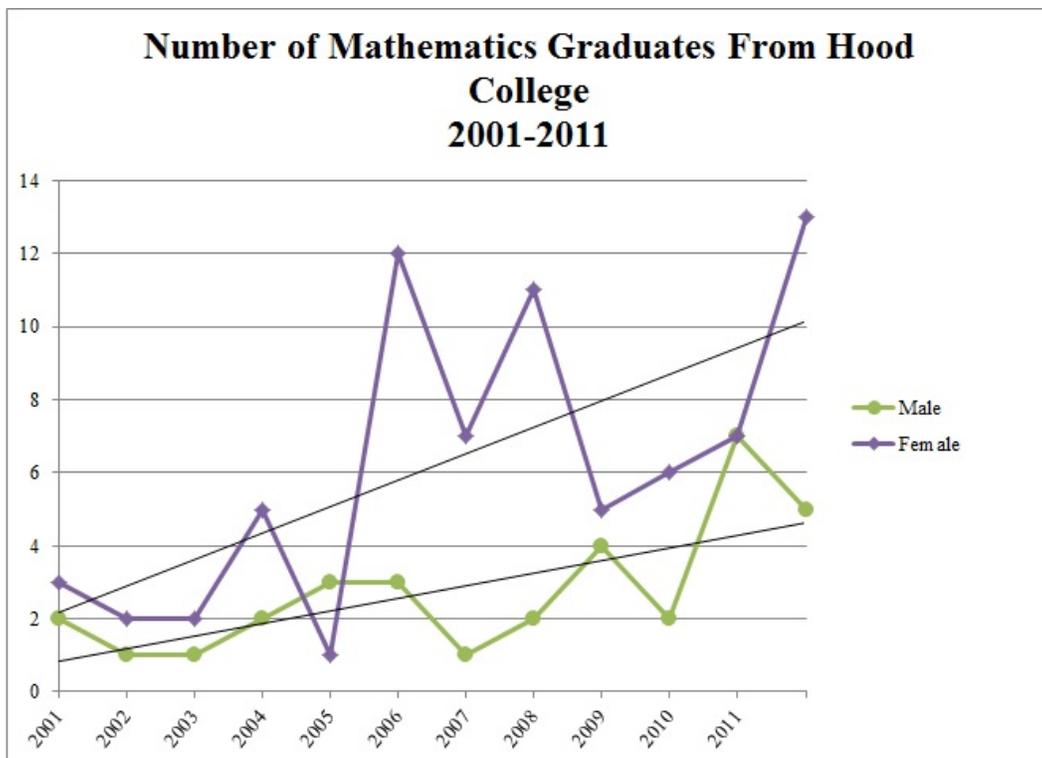


Figure 6: Male and Female Mathematics Majors from Hood College

mathematics from Hood College has been increasing (see Figure 5), although slowly. Although this is better than sharp overall decline from 1986-2011, it is a very slow incline. On the other hand, the percentage of women graduating with a degree in mathematics across the United States from 2001-2011 is still declining. It is not such a steep decline as from 1986-2011, but it is a decline nonetheless. The strong differences between the 25 year trend and 10 year trend is mostly likely because of the change in the demographics at Hood College.

The number of students graduating with math degrees is increasing, both from Hood College and from the United States. This is true for both men and women, not just the graduates as a whole (see Figure 6 and Figure 7). In the United States, not only are there more male math graduates, but the number of male math graduates is increasing faster than that for women. It is interesting to note that the opposite is true for Hood College; there are more female math graduates, and the number of female math graduates is increasing faster than that for men.

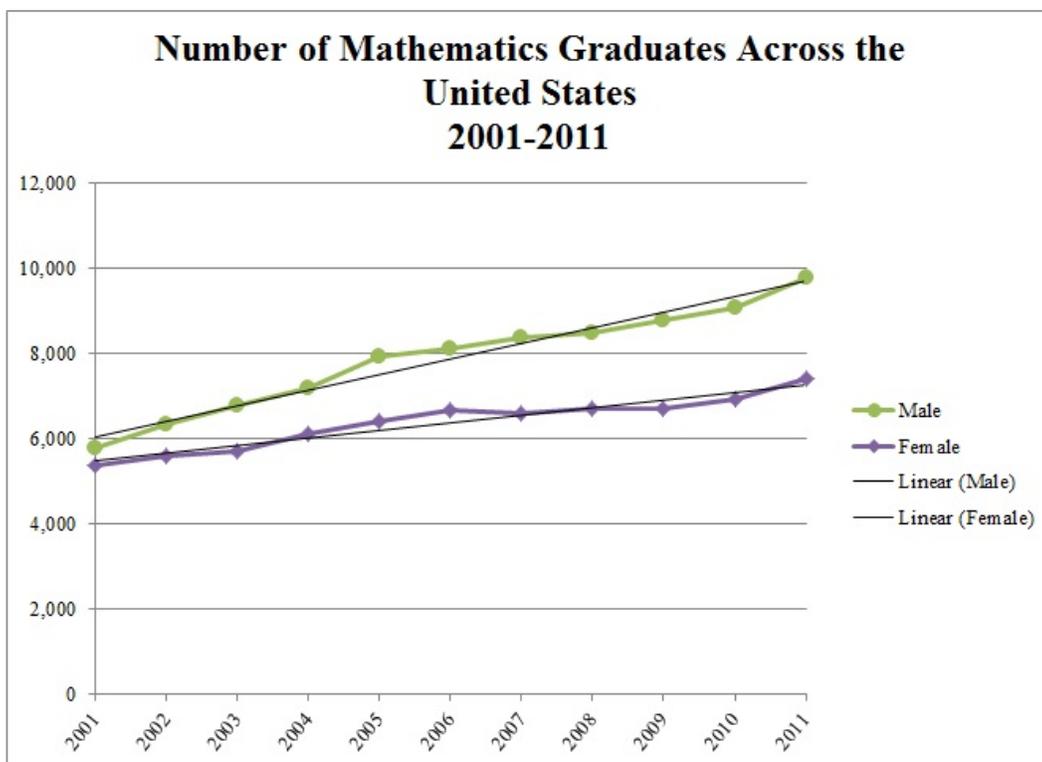


Figure 7: Male and Female Mathematics Majors from Hood College

Finally, I looked at how math majors at Hood College were helping their

future careers through interning. As seen in Figure 8, the internships outline by women are outline in red and those by men, in blue. The internships that Hood students pursuing degrees in mathematics have taken part in for credit. Of the 13 internships held over the past 23 years, only two were held by men. The other 85% of the internships were held by women, which is higher than the average 72% concentration of women in the mathematics major at Hood. The internships themselves have been held at a variety of sites, but have the same theme; they all require the problem solving skills and out-of-the-box thinking that are characteristic of mathematicians.

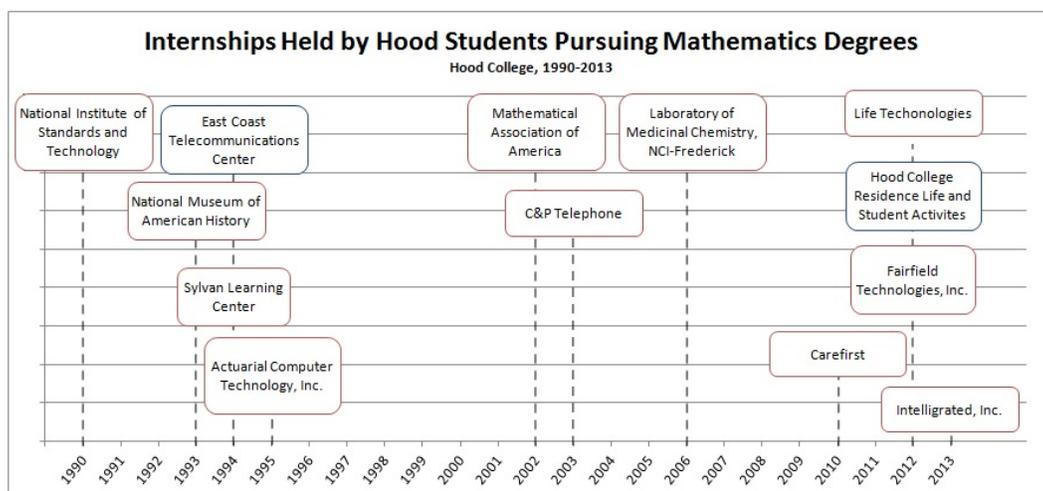


Figure 8: Internships Held by Mathematics Majors at Hood College

It is clear to see that the women in the mathematics department of Hood College are thriving, especially in comparison to those from other universities. This may be due to the emphasis the department puts on women succeeding in math, or because 71% of the professors in the department are women.

Overall, the mathematics department is showing a steady increase in their graduates. At the current rate, by 2017, 5% of the graduates from Hood College will be receiving degrees in mathematics. But, why? One study found a “perfect correlation between students who were not science or engineering majors and students who thought math was hard,” [6]. More research reveals that the students who drop their major do so because the “introductory courses are often difficult and abstract...their high schools didn’t prepare them for the level of rigor in the introductory courses” [5]. In contrast with some other colleges, the mathematics department of Hood College puts an emphasis on “collaborative work” and interactive learning. Group work helps student understand material better and encourages them to turn work in on time [10]. Both of these things will help a student perceive a class as easier than a class where they don’t understand the material and have to rush to do their work. If the math classes are perceived as easier, the student is highly unlikely to drop their math major due to finding it too difficult. Hood College professors in mathematics strive to make their classes easy to understand, are available almost 24/7 to help any student, and create collaborative work environments to further aid the student’s learning. All of these qualities combine to create an environment that encourages students, particularly women, to pursue a degree in mathematics.

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