INOPPORTUNITY OF GENDER

THE G.I. BILL AND THE HIGHER EDUCATION OF THE AMERICAN FEMALE, 1939-1954

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An Honors Thesis

Presented to the Faculty of the

New York State School of Industrial and Labor Relations

at Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science With Honors

by

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May 2005

ABSTRACT

While the 1944 Serviceman's Readjustment Act, commonly known as the G.I. Bill, has been instilled within the collective consciousness of the United States as one of the most overwhelmingly positive pieces of legislation in the nation's history, there has been little empirical inquiry into the effect that it had on the non-veteran female. Both Marcus (2003) and Bound and Turner (2001) find that of the World War II veterans that obtained a higher education on the G.I. Bill, fully 20 percent of them, or 400,000, would not have attended college had it not been for the educational subsidy offered to them in the G.I. Bill. Might this extra boon in enrollment during the postwar era have affected females' ability to pursue higher education?

Starting with an assessment of the dominant trends in mid-century higher education and the specific changes that were occurring for females in higher education, a foundation is established in Chapter Two upon which the effect that the retuning World War II veterans and the G.I. Bill had upon female's mid-century enrollment in higher education institutions may be evaluated. In general, by the dawn of World War II, higher education was only secondary to labor market experience in its ability to improve the social and economic standing of females in society. If the G.I. Bill did, in fact, crowd out females' ability to obtain a higher education, it did so at the expense of the social and economic standing of females of this era.

Subsequently, the direct quantitative consequences that the returning veterans had upon female enrollment and educational attainment during this era are examined in Chapters Three and Four. This is done after controlling for the effects that other phenomena occurring during the postwar era had on enrollment levels. Two datasets illuminate the main analysis: micro data obtained from the National Longitudinal Study of Mature Women documenting the experiences

of 5,083 women born between 1920 and 1935 and institutional level data from over 200 New York State Institutions between academic-years 1939-1940 and 1953-1954.

The empirical findings of Chapter Three demonstrate that at the peak of veteran's enrollment in academic year 1947-1948, a female was less likely to enroll in an institution of higher education than a female of similar attributes during the later years of the war. Moreover, based upon the institutional analysis in Chapter Four, at any given academic institution, an increase in both relative and absolute veteran's enrollment is associated with a decline in both relative and absolute female enrollment during the immediate postwar period. Females are also more likely to enroll in "lesser" institutions of higher education at this time, vis-à-vis the most prestigious schools. Together, empirical evidence from Chapter Three and Chapter Four suggest that the increase in veterans' enrollment due to the G.I. Bill at least in part contributed to diminished attainment of females in higher education during the postwar era.

Finally, Chapter Five assesses how the effects of the G.I. Bill surprised the women's movement during this time, and offers some concluding thoughts.

BIOGRAPHICAL SKETCH

Matthew Peter Nagowski was born and raised in Buffalo, New York. He graduated from Orchard Park High School in June of 2001. At Cornell University, he pursued formal concentrations in Economics and Inequality Studies in the New York State School of Industrial and Labor Relations. A Cornell Tradition Fellow and the recipient of the Edward M. Snyder '86 prize for outstanding undergraduate work in statistics; he is expected to graduate with a Bachelor of Science with Honors in May of 2005. In the spring of 2004, he studied Modern History and Economics at Lady Margaret Hall, Oxford University. Upon graduating, Nagowski will be employed at the Federal Reserve Bank of Boston as a Research Assistant.

To my parents, Peter and Barbara, with boundless love.

ACKNOWLEDGMENTS

Upon completing my senior thesis, I find myself indebted to countless people who have assisted me along the way during the long and often arduous process. However, all errors and omissions in the following pages are strictly my own.

Foremost, I must thank my advisor, Professor Boyer, for his dedication to this project. He worked with me through thick and thin during the writing of this thesis, and he commented untiringly on the various stages of research. Moreover, much of the external motivation I found in writing this thesis may be found in my weekly meetings with him, as I eagerly anticipated another one of his amusing stories, anecdotes, or puns.

Secondly, I would also like to thank Professor Fran Blau, the secondary reader for this thesis. It was in her class that I first stumbled upon this idea for a thesis topic, and her positive encouragement and suggestions at each step of the research process have helped to bring this thesis to fruition.

Along the way, I benefited from many useful discussions detailing the econometric techniques used in my analysis with Professor Tim Vogelsang, Professor Francesca Molinari, Professor Thomas DiCiccio, Michael Rizzo, and Liang Zhang. I am beholden to their comments for allowing me utilize a level of econometric sophistication that I otherwise would never have been able to grasp.

Others who have commented on my work and provided useful insights over the past year have included Alan Berube and Audrey Singer at the Brookings Institution, Lisa Barrow and Jeff Campbell at the Federal Reserve Bank of Chicago, and Bob Tannenwald at the Federal Reserve Bank of Boston. This thesis has benefited immensely as a result of their comments and suggestions

And of course, no recognition would be complete without mention of Professor Ronald Ehrenberg, my principle undergraduate advisor and mentor. Firstly, it is only because of the

opportunities that he afforded me as a young freshman that I believe I was ever able to conduct research off this caliber. Secondly, I must thank him for his understanding in allowing me to pursue an interest in economic history – it is only with his support and encouragement for this project that I was ever able to complete it. Ehrenberg also significantly advised my work during the research process, as I often turned to him with questions on the feasibility of my models, and I thank him for having the patience to answer my myriad questions without fully knowing the scope and direction of my research.

I will also be forever indebted to my parents, for faithfully supporting me in every endeavor that I pursue. None of my accomplishments in life would not be possible without my parents and the loving and nurturing environment that they raised me in.

And finally, I must thank the highly distinguished gentlemen who resided at 103 Sage Place during the 2004-2005 academic year. Only by looking forward to returning home to them on a nightly basis was the work required by this thesis tolerable.

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LIST OF ABBREVIATIONS

AAUW – American Association of University Women

FSGLS – Feasible Generalized Least Squares

G.I. Bill - The 1944 Serviceman's Readjustment Act

LL – Log-Likelihood

MLE – Maximum Likelihood Estimator

NLSMW – National Longitudinal Study of Mature Women

NYS – New York State

CHAPTER ONE

INTRODUCTION

"If the college woman is a mistake, Nature will eliminate her."

David Jordan Starr, President of Stanford University, 1906

An Introduction to the G.I. Bill – Origins and Effects

The G.I. Bill, formally known as the 1944 Servicemen's Readjustment Act, provided a vast array of benefits to the American veterans returning from World War II. These benefits included, but were not limited to: a bonus, unemployment provisions for a year, guaranteed loans for home ownership, and – perhaps what the legislation is most noted for – subsidies for a returning veteran's collegiate or vocational education. The G.I. Bill was the first comprehensive piece of federal legislation explicitly geared towards the students in higher education institutions. Veterans were offered vouchers that could be utilized at any accredited institution of higher education or post-secondary vocational school. Previously, the federal government primarily took an interest in aiding institutions of higher education, like the 1862 Morrill Act that allowed for states to finance higher education by the sale of land. As such, the G.I. Bill is naturally one of the most heavily scrutinized pieces of higher education legislation by academics. In assessing the consequences that the first federal subsidy of an individual's higher education had upon the American economy and its system of higher education, present-day policy makers are able to learn from previous pieces of legislation to implement more targeted and effective legislation in the future.

As early as 1943, President Franklin D. Roosevelt possessed a grave concern for the future of the postwar economy and a possible return to a depression economy after the wartime respite. While not yet known by name, the basic tenets of the G.I. Bill were conceived by the administration as one method of sustaining America's postwar economy. However, Roosevelt sought to extend the principles of his New Deal legislation to all citizens, and not just returning veterans. In a way, granting veteran's benefits was merely a useful tool that the Roosevelt administration could utilize in postwar planning to make its aims more political feasible. The

federal government sought to avoid a downturn in the postwar economy and the veterans existed as a traditional and popular method by which economic assistance could be delivered to the nation at large (Olson, 1974, 24). The postwar economic stability forged by such legislation would also have the potential to create residual political benefits for Roosevelt and his Democrats, as economic security and stability would be vital to perpetuate political stability during what was being anticipated as potentially tumultuous times, as many postwar eras have proven to be (Peeps, 1984, 515-517).

Yet, with Roosevelt's postwar economic restructuring package floundering under the confines of a wartime Congress gingerly concerned over the prospect of more social and economic legislation in the vein of the New Deal, the American Legion – the nation's largest veterans organization – and its congressional lobby would ultimately spearhead and champion a "G.I.'s Bill of Rights". The American Legion argued for a sizeable benefit package for returning war veterans by appealing to Americans' sense of patriotism and obligation to their "war heroes". This campaign was ultimately an attempt to appease the Legion's current membership while simultaneously hoping to recruit new members to the organization.

Initially intended as but one component of a returning veteran's compensation package, the higher education component of the G.I. Bill soon dwarfed other aspects of the legislation in its size, scope, and the ability to capture the American public's imagination. The breadth of the program expanded rapidly in the early postwar years, as rules were relaxed or expanded to accommodate the demands of returning veterans who sought more education than originally planned. Stemming from a bill that had originally been promoted as a modest benefit package for returning war veterans that historically had been forgotten about by their government, the American Legion soon found itself to be the proud promoter of a substantial piece of legislation that was perceived to be "revolutionizing" and "democratizing" the face of higher education in

America. Important also was the fact that the G.I. Bill did not discriminate - both black and female veterans would also benefit from the provisions of the legislation.

In the graduating class of 1949, a full 70 percent of degree earners were veterans; by the time the last veteran of World War II exhausted the use of his or her educational benefit in 1953, approximately 2,232,000 veterans had obtained advanced vocational or higher education at the expense of the United States government. And as the historian Keith Olson notes, not only were the veterans taking advantage of the educational benefits in numbers that far exceeded the forecasted enrollment levels, but they were also excelling in their academic pursuits far beyond educator's wildest expectations - outperforming non-veteran students across the board. Originally having scoffed at the idea of a "B.A for the G.I." the presidents of such institutions as Harvard University and the University of Chicago ultimately conceded that, much to their surprise, the G.I. Bill was an overwhelming success (Olson, 1973, 596-7).

Today, the G.I. Bill is revered across America, a cultural consensus existing to promote the bill as a revolutionary and vital cornerstone to American democracy. Such works as Michael J. Bennet's *When Dreams Come True*, Milton Greenberg's *The GI Bill: The Law That Changed America*, and *American Singularity: The 1787 Northwest Ordinance, the 1862 Homestead and Morrill Acts, and the 1944 G.I. Bill* by Harold Hyman all present "popular" perspectives on the G.I. Bill. These books cherish the positive effects that the bill had on many G.I.'s personal lives, and, perhaps more importantly, the role that such legislation had in creating a strong, middle-class America. As Michael J. Bennet claims:

> "The GI Bill of Rights was the law that worked, the law that paid for itself, and reaped dividends because it made the American dream come true for so many. It enabled millions of working-class people to make a

> middle-class way of life for themselves. It did it by giving them an educational grubstake and a homesteader's claim on the New Frontier – but left the rest to them. They had to make the dream work for themselves, and if for some reason, it didn't, they had no grounds for complaint. Pursuit of happiness is guaranteed – not the complaining." (Bennett, 1999, 317)

While the G.I. Bill has been rightfully engrained into America's collective consciousness as an example of an overwhelmingly successful piece of legislation that was able to both economically and socially empower its users, limitations of the policy still exist. Indeed, the actual use of the higher education provisions in the G.I. Bill is most likely not as high as the imagined figure that exists in the minds of many Americans. A majority of World War II veterans did not benefit from the higher education and training provisions of the G.I. Bill. Due to a lack of ability, information, or want, numerous poor, working-class or middle-class veterans did not benefit from the higher education provisions that the bill offered to them. Even though over two million veterans benefited from the higher education provisions that the legislation offered, this formidable number amounts to less than 15 percent of the roughly 15 million men and women veterans of World War II, with an additional 20 percent of these returning soldiers obtaining vocational training through funding from the G.I. Bill. In total, 35 percent of all returning veterans obtaining education or training in one way or another due to the G.I. Bill (Olson, 1973, 602).

This legislation was not enacted into a vacuum either; a sizeable number of returning veterans would have pursued higher education or vocational training regardless of the vouchers that the G.I. Bill offered. In this light, the G.I. Bill was not revolutionarily at all, but rather

served the intended aims of the Roosevelt administration's carefully crafted postwar policies – to ensure the proper economic adjustment to a peacetime economy without encountering massive unemployment or relapsing into the depression of the 1930s.

Still, the direct and indirect effects of the G.I. Bill should not be understated. At the very least, the G.I. Bill provided free higher education to returning veterans who would have had to pay out of their own pocket or take out loans if they wished to pursue their war-interrupted studies. This allowed veterans' money to be spent in other important sectors of the economy, and would often mean that the returning veterans were able to attend better academic institutions than they otherwise could afford. As an article in *Time* magazine asked, "Why go to Podunk College when the Government will send you to Yale?" [1] For this reason, veterans understandably enrolled in the largest and most prestigious public and private institutions, while shirking from junior colleges, teachers' colleges, and lesser-known schools.

Overall, it was estimated by a contemporary survey sponsored by the Carnegie Foundation for the Advancement of Teaching that, in academic year 1946-1947, ten percent of the veterans who were enrolled in higher education institutions during the percent era would not be pursuing a degree were it not for the G.I. Bill, while another ten percent of veterans "probably" would not have attended college save for the G.I. Bill (Olson, 1973, 606-7). Collectively, these numbers point to a 20 percent boost in veterans' enrollment due to the G.I. Bill during this period. Assuming that veterans composed 70 percent of postwar student enrollment, this finding suggests that, at best, the G.I. Bill was directly responsible for roughly 15 percent of all students on college campuses during the second half of the 1940s. Even so, this is not a trivial number; 15 percent of the entire enrollment of college students during this era

[1] "S.R.O." *Time*, 47 (March 18, 1946): 75.

meant that more than 400,000 veterans who otherwise would not have obtained higher education went to college due to the G.I. Bill.[2]

The long-term economic and technological benefits from such a significant investment in higher education must not be overlooked either. Writing on the changing fabric of American inequality and wage structure in mid-century America, Goldin and Katz (1992) describe a "Great Compression" which occurred in U.S. wage inequality during the time. This phenomenon, which would establish an unprecedented era of American economic security and prosperity, occurred during the postwar era in part due to the effects of the G.I. Bill. Essentially, while the demand for educated labor remained constant in postwar America, the supply of educated labor relative to uneducated labor increased substantially, thus shrinking the wage differential that exists between unskilled and skilled labor while creating a large middle-class composed of both educated and working-class individuals enjoying the benefits of a consumer-oriented society. Undoubtedly, the investments in educational infrastructure and human capital development that the G.I. Bill allowed helped to further sustain the engine of America's long-run economic growth.

Recently, labor economists have started to take an interest in the G.I. Bill. Utilizing potent micro-level datasets, they have attempted to establish the *ceterus paribus* effect that the G.I. Bill had on veterans' enrollment in higher education institutions across the country in the immediate postwar era. Taking a skeptical attitude towards social historians' notion that the G.I. Bill was responsible for "democratizing" the face of higher education, Bound and Turner (2002) assess the argument that the postwar enrollment spike was solely due to returning soldiers whose education had been forcefully delayed due to their contribution to the war effort. Using the structure of the draft during the World War II period and the nature of the armed forces'

[2] This calculation corresponds with the estimation that 20 percent of the 2.3 million veterans that received a higher education due to the G.I. Bill would not have obtained a higher education otherwise.

manpower requirements, their paper addresses the effects of selection through the comparisons of the educational attainment of white veterans and non-veterans, finding that, on average, white veterans had a five to eight higher percent chance of graduating from college than their white non-veteran counterparts due to the experience of military service and the benefits of the G.I. Bill.

Moreover, Marcus (2003) presents finding that are in line with that of Bound and Turner (2002). By comparing the educational experiences of veterans and non-veterans while controlling for such factors as age of birth, ability, and socioeconomic background, Marcus (2003) demonstrates that the G.I. Bill most likely increased total postsecondary educational attainment among all men born between 1921 and 1933 by about 15 to 20 percent, which corresponds to the results of the aforementioned surveys conducted in the postwar era. However, he cautions that the majority of men who benefited from the educational provisions of the G.I. Bill fell into the upper echelons of America's socioeconomic spectrum and that the perceived economic benefits and expected returns to attending college were the most important determinants to whether or not a veteran enrolled in a higher education institution under the G.I. Bill.

And finally, in an extension of their original research that adds a racial and regional dimension to the analysis of the G.I. Bill, Turner and Bound (2003) find that for black veterans (who were just as eligible to the benefits provided by the G.I. Bill as their white counterparts), the G.I. Bill was less successful in granting access to higher education. This occurrence was particularly acute in the American South, where both formal institutional impediments and informal obstacles to the higher education of blacks still persisted. While perhaps "democratic" in its ideals, the G.I. Bill was decidedly less so in practice.

Taken together, these finding demonstrate that the G.I. Bill was not as revolutionary as its popular lauders otherwise make it out to be. Despite the establishment of a groundbreaking

federal program that offered to pay for the higher education of any returning veteran that sought one, numerous educational, socio-economic, and cultural obstacles still existed to obtaining a higher education for many young individuals at this time. Yet, undeniably, the G.I. Bill still motivated a large wave of returning veterans to pursue a higher education, and as such flooded college campuses nationwide with thousands of new students, many of whom would never have thought they would have obtained a free ride to college courtesy of Uncle Sam had they been asked at the beginning of the World War II.

The Female Experience at the End of World War II

While contemporary research into the effect that the G.I. Bill had on veterans' enrollments has recently become quite active, what has yet to be scrutinized is the effect that the postwar environment and the G.I. Bill may have had on the higher education of American women, and in particular, the non-veteran female. Many historians and economists have examined the experience of American females in the 1940s - both during the war and after - assessing the social, cultural, and economic transformations that females underwent this dynamic era. Yet, little or no exhaustive research exists on the effect on non-veteran female college enrollments of the incoming flood of male veteran students.

For the returning veteran that was female, the usage of the educational benefits of the G.I. Bill closely matches the usage rates for male veterans. Of the 2,232,000 veterans that had been educated under the G.I. Bill by 1956, 64,728 were women, roughly comprising three percent of those individuals that had taken advantage of the G.I. Bill - a figure that reflects almost the exact proportion of women who served in the military during World War II (Solomon, 1985, 189). However, for the non-veteran female, with over two million mostly male

veterans flooding college campuses in the immediate postwar era, the landscape of higher education was drastically changing during this time, and this influx of returning male veterans may have had a residual effect on female enrollment levels.

The rush of male veterans into the collegiate setting occurred during a time when an overwhelming number of economic opportunities were being afforded to females. Thanks largely to the experiences of World War II and the wartime demands that were placed on the nation, women who wanted a life outside of the domesticity of the home were making unprecedented strides in their ability to do so; the role of women was increasingly becoming one that was integrated into all of society's public functions.

Not only did women enter the labor force in record numbers during this time, but they were also able to attend college in unprecedented amounts due to the absence of men on campuses nationwide. But such a wartime situation would necessarily lend itself to a reactionary process once peacetime returned. Bowing to the pressures of a still dominantly patriarchal society that sought to accommodate the returning veterans, "heroic" from fighting World War II, females would have to find themselves leaving their wartime activities to accommodate the returning veterans.

If the labor force experience of females during the war and in the immediate postwar era is an analogue for the condition of females in higher education during this time, then women would also be crowded out from their educational pursuits when the veterans returned to the home front. During the war, females responded valiantly to the blistering demand for production workers. In all, 6.5 million additional females "enlisted" in the labor force by the end of the war, bolstering the labor force participation rate of working-age women to an unprecedented 37 percent in 1944, with nearly half of all women reporting employment for at least part of that year. This represented a remarkable achievement for the integration of women

into the economy, and women workers were increasing their numbers to record levels in every field of the labor force, including large amounts of growth in manufacturing, clerical, and professional jobs. Yet, at the war's end, 2.3 million women would leave their jobs, and the labor force participation rate of females would fall to less than 30 percent by 1950, with women comprising less than a third of all workers.

While a lot of these female jobs were lost undoubtedly due to the necessary de-militarization of the American economy at the end of the war, women's jobs, especially in manufacturing, were also being lost due to the need to provide job's to the returning veterans. By 1946, many women found themselves back within the domesticity of the household. And even if many of these women were glad to return to the role of a housewife, there were undoubtedly some women who sought to preserve their wartime jobs, or at least continue to be employed, even if in a different capacity. Yet often, the closure of publicly supported wartime childcare centers necessitated that women return to the domesticity of the home to take care of the children, as no other affordable childcare option was available.

For many of these women, seeking employment was not merely just a preference - the economic well-being of their families depended on the financial support that a secondary source of income could provide, as the average purchasing power of a family decreased between 1944 and 1950 (Hartmann, 1982, 92). Pollsters found that anywhere from 61 to 85 percent of all female employees sought to keep their jobs after the war ended, with 47 to 60 percent of married women answering yes to the same question. Correspondingly, 60 to 80 percent of all workingwomen responded to these surveys by claiming that they were working to explicitly help pay for the day-to-day expenses that their family faced. Moreover, even if a female was able to keep her pre-existing job or find a less attractive new one, she often suffered a pay cut and was forced to take shorter hours. Thus, due to the unyielding pressure that the returning veterans

placed on the economy and the labor force, many women were denied access to or opportunities within the labor market during the immediate postwar era (Hartmann, 1982, 86-93).

The return of the veterans to postwar America would affect the American woman in myriad social ways as well. As the veterans began to trickle home from the Pacific or European theatres towards the end of 1945 and early months of 1946, the marriage rates of females (as well as men) skyrocketed. While marriage rates increased during the early years of the war, in part due to the incidences of marriages that were delayed due to the depressed economic conditions of the 1930s, the greatest years of wartime mobilization witnessed a diminished rate of marriage.

With the return of the veterans, the marriage rate exploded by the end of the war; on average 148 out of every 1000 girls aged 17 to 29 were married in 1946, up from 105 in pre-war levels. By 1950 66.1 percent of all women ages 14 and older were married, as compared to 59.5 percent at the beginning of the previous decade. In tandem with this phenomenon, the average age of marriage fell as well – over the course of the decade, the median age of marriage for women had fallen from 21.7 years to 20.5. And of course, the increasing marriage rates corresponded in an increase in fertility rates, resulting in the "baby boom" of the late 1940s and early 1950s. As postwar females lost their footing in the workplace, they simultaneously underwent a reversion back to the domesticity of the home and married life. Once again, the reactionary pressure of returning veterans placed duress upon and shaped the experience of females during the immediate postwar era (Hartmann, 1982, 164-165).

Historical anecdotes suggest that the returning veterans also affected the environment of female higher education in the immediate postwar period. Indeed, just as they were in the labor market, females were systematically crowded out of higher educational opportunities due to the flood of returning veterans that was occurring on college campuses everywhere. While the

markets for higher education and labor are decidedly different, they do offer some close analogues. Demand for higher education is constrained by the ability for institutions to supply spaces in their classrooms. Meanwhile, within the labor force, the amount of labor that is employed is constrained by the demand for jobs to be filled. Altogether, in the postwar era, women were constrained from educational and employment opportunities by the shortage of spots in classrooms and jobs, respectively, that occurred due to the returning veterans flooding the previously tight labor and educational markets.

Similar to their labor market experiences of women, females in higher education also experienced a wartime boon in opportunities. As the war extended until the middle of the decade and increasingly more males were being drafted to fight overseas, colleges and universities turned to females to sustain their pre-war enrollment levels. Yet, these institutions had to compete with the wartime employment of females to fill their classrooms, as females were eager to help out with the war efforts either directly, in the form of nurse's, nurse's aides, or ambulance drivers, or indirectly, in wartime defense manufacturing employment or other sectors of the labor market that were experience a high demand for labor during this time.

At first, female participation in higher education during the war remained constant, and in fact, the absolute enrollment of women in higher education declined by 25,000 students between America's entry in the war and 1943. But, between academic years 1943-1944 and 1945-1946, female enrollments in higher education saw an increase of nearly 20 percent, with 50,000 more females students in higher education each year, and over 100,000 more females pursuing studies in higher education by the end of the war than its onset.[3] It is important to realize that this increase in enrollments may not wholly constitute new enrollments; this trend most likely occurred in part because women were able to spend a relatively longer amount of time in

[3] *Biennial Survey of Education in the United States***.** United States Office of Education. Washington: U.S. Govt. Printing Office, Various Years.

colleges and universities. With their sons away and fighting the war overseas, families would have been more likely to support their daughters for a longer duration of time, and girls who originally planned on obtaining two years of a college education may have ultimately obtained four due to the wartime environment.

In doing so, the war also altered the experiences for women in college greatly. Coeducation became increasingly popular as institutions realized the economies of scale in doing so, and the percentage of women enrolled in women's colleges declined to less than 15 percent of total female enrollment by the end of the decade. Moreover, increasingly more women pursued courses of study in the hard or applied sciences. At lots of institutions across the nation, women were admitted to engineering programs for the first time, and the number of bachelors degrees awarded to women in the sciences increased by 30 percent by war's end. Finally, females were also making unprecedented inroads into graduate and professional schools during this period (Hartmann, 1982, 102-104).

Yet, just as employed females succumbed to the pressure of returning veterans in the labor force and found themselves leaving their jobs in the postwar era, so too would females who sought higher education. With the end of the war in 1945 and the higher education subsidy awarded to them in the G.I. Bill, hundreds of thousands of returning veterans were flocking to college campuses by 1946, bringing an unprecedented number of male students to many of these institutions. Moreover, with sons home from the war, families were now more likely to support their boys over their girls in pursuing a higher education, reflecting the still overwhelming societal notion that a woman's place was primarily in the domestic sphere.

The social historian, Susan Hartmann, writing on women during the 1940's, reports that many qualified women were turned away from higher education institutions due to the unprecedented demand to educate returning veterans during the immediate postwar era.

Admission preferences for returning veterans were found at most institutions by 1946, in part due to notions of patriotism but also because veterans provided a guaranteed revenue source. In turn, many colleges and universities imposed quotas upon women during this time, or outright limited women from applying in certain circumstances. For instance, at the University of Wisconsin, out-of-state women were first limited in their ability to apply to the university at the immediate end of the war, and they were later outright barred from seeking admission for study in Madison as veteran enrollments reached their peak (Hartmann, 1982, 106).

Meanwhile, in a political and organizational history of the American Association of University Women (AAUW), Susan Levine writes about the frequent frustrations the organization encountered with the phenomenon of returning veterans on college campuses. It was not untypical for women's collegiate facilities to be turned into facilities for the returning veterans, with numerous female dorms being converted into accommodations for the veteran students. As Levine reports, space in classes were reserved for veterans first; females could only enroll in those classes that were still open after all of the veteran and non-veteran males had enrolled (Levine, 1995, 92-96). And, in the summer of 1946, in the official publication of the AAUW, the *Journal of the American Association of University Women*, Helen C. Hosp, the organization's associate for higher education issues testified that the doors were "banging shut" for females in higher education, citing the educator Dr. Benjamin Fine as concluding that, "Thousands of fine women are being turned away because of insufficient facilities." [4]

Ultimately, the progress and growth that females made in higher education during the war would be stunted by the wartime experience. As the returning veterans took advantage of the educational benefits within the G.I. Bill, college campuses nationwide became overcrowded with predominantly male veteran students, limiting female access to higher education. Absolute

[4] Hosp, Helen C. "Student Pressures in Higher Education." *Journal of the American Association of University Women*. Vol. 39 No. 4. pp. 229-234.

enrollment levels in part reflect this fact, as between 1945-1946 (the last academic year in which the war would have been a factor in college enrollment decisions) and 1946-47, total enrollments of females in higher education decreased by close to 20,000 women - from 676,869 to 661,000.[5] While this decrease does not necessarily infer that females were directly crowded out of higher education due to returning veterans swamping college campuses nationwide, as females may have been *voluntarily* forgone their educational pursuits by marrying, working, or having children, these trends certainly suggest that the massive influx of veterans onto college campuses at least play some part in the story. Moreover, if we assess these enrollment numbers in conjunction with the eyewitness accounts of educators at the time, the evidence seems suggestive enough to conclude that, indeed, females were crowded out of the opportunity to pursue a higher education due to the G.I. Bill and the impetus of veteran students that it delivered to the nation's colleges and universities.

Scope of Analysis: The G.I. Bill and Female Enrollment Levels

While historical anecdote and aggregate enrollment trends provide a general answer to the question of whether or not females were excluded from higher education opportunities, no rigorous empirical economic analysis of the higher educational availabilities for females in the postwar period has ever been performed. Such an analysis allows for substantially more insight into the question of whether or not females were limited from pursuing higher education, as it can establish the direct quantitative effect that the veterans' postwar enrollment in college had on females. This inquiry thus presents itself as an opportunity to explicitly answer the question,

[5] *Ibid.*

"Did the G.I. Bill have any quantitative *ceteris paribus* effect on the non-veteran female attempting to pursue higher-education in the postwar period?"

As stated, this problem is conceptually very easy to understand, and as such, may appear simpler to answer at first glance than the case may be. In actuality, due to the historical context in which this question operates, the problem is highly dynamic and loaded with intricacies. First, it must be discerned whether or not the postwar period experienced any noticeable change in female enrollment levels in higher education. If no shift in the prevailing enrollment trends of the era is present, than the G.I. Bill only complemented and acted in addition to existing trends in higher education and did not substantially alter the higher education experiences of non-veteran females.

However, if a change in the prevailing enrollment trends is discerned, it is important to remember that this does not necessarily imply that the G.I. Bill had a direct causal effect on female enrollment levels. Rather, an array of possible explanations exists; correlation does not necessarily imply causation. In particular, female enrollments trends could have changed regardless of the G.I. Bill's existence. Females could have been "crowded out" from the collegiate experience simply due to the influx of returning male veterans into colleges – i.e. those returning veterans that would have sought higher education in mass numbers regardless of the educational provisions that the G.I. Bill offered. If this scenario were the case than the G.I. Bill, by boosting veteran enrollment levels by roughly 20 percent, would have served to further crowd out females from opportunities in higher education during the postwar era.

The increased availability and attractiveness of alternative options to higher education for females in the postwar period, such as marriage or workforce participation, must also be accommodated for in this inquiry. What may appear at first to be "crowding out" may in actuality simply reflect the conscious decisions of females to pursue one of the numerous

alternative options to higher education. This notion presents a possible problem in documenting a downtrend in female enrollment totals during the postwar period. Only after controlling for the fact that females may have actively preferred and selected other pursuits besides higher education may it be asserted that females were actually limited or restricted from obtaining a higher education due to the influx of veteran students during this time.

Another option may be that some females were not directly crowded out of a collegiate experience during the postwar era, but rather that they were limited in their choice of institutions due to a societal inclination to accommodate the veteran's collegiate preferences first. If this is the case, females were not necessarily crowded out of a collegiate experience, but rather "crowded down" – out of the flagship state universities and prestigious private institutions that the majority of returning veterans were flocking to and subsequently increasing their enrollment in the "lesser" liberal arts colleges, junior colleges, or business institutes.

For the purposes of this analysis, two questions ultimately become the most useful. First, all other things held equal, would the "typical" female that sought to attend college during this era have a lower probability of enrollment after the war than before or during the war? If, on average, the female who aspired to attend college was less likely to enroll in college after the war than before the war, then the influx of male veteran enrollments in the second half of the 1940s, which the G.I. Bill was in part responsible for, is one determinant of this result. Secondly, at any given higher education institution, did an increase in veteran enrollments result in a decrease in female enrollment either relatively or absolutely? All other things held equal, if total female enrollments remained stagnant during the postwar era and more veterans on a college campus necessarily meant that fewer female students were present, this would provide evidence that the returning veterans and the higher education subsidy of the G.I. Bill directly impeded female enrollments.

Starting with an assessment of the dominant trends in mid-century higher education and the specific changes that were occurring for females in higher education, Chapter Two establishes a foundation upon which the effect that the retuning World War II veterans and the G.I. Bill had upon females' mid-century enrollment in higher education institutions may be evaluated. Long-term trends in higher education, including the advent of the research university, the explosion in public institutions, and the gradual opening of collegiate opportunities to middle-class men and women all were still affecting the experience of females in higher education during the decade. By America's mid-century, higher education would be the second most important mechanism for the integration of American women into the social and economic fabric of the country – only labor force participation was a more effective motivator of female advancement in the public sphere.

Stemming from this analysis, the treatment effect that the G.I. Bill might have had on the higher educational opportunities for women may only be discerned within the context of the pre-existing trends that existed in higher education. The direct quantitative consequences that the returning veterans had on female enrollments may be determined by controlling for the effects that other phenomena occurring during the postwar era had on enrollment levels.

Two datasets illuminate this inquiry. The first dataset, derived from the U.S. Department of Labor's Bureau of Labor Statistics' National Longitudinal Survey of Mature Women (NLSMW), is a micro-level dataset of 5,083 women from across America born between the years of 1921 and 1937, which corresponds with the time period of this inquiry, as these females would be reaching the college age of 18 between 1939 and 1955. Commencing in 1967, when the female respondents were between the ages of 30 and 45, the survey provides information on an individual's family and educational backgrounds, as well as employment and life experience history. Using logistic regression analysis, one may test whether or not, all other things held

equal, a woman who sought higher education in the postwar era was less likely to enroll in an institution of higher education than a woman of similar characteristics during the war.

The second data set used in this analysis is an institutional level dataset comprised of 293 institutions of higher education in New York State between academic years 1939-1940 and 1953-1954. By combining data from the U.S. Office of Education's *Fall Enrollment in Higher Education Institutions*, which offers institutional level veterans' enrollment data for academic years 1947-1948, 1948-1949, 1950-1951, and 1951-1952 with the University of the State Of New York's *Annual Report of the Education Department* statistics volumes, a longitudinal dataset comprised of various variables for each institution and year of observation has been constructed, including total, undergraduate, unclassified, and graduate male and female enrollment, number and type of degrees earned by both males and females, size of the incoming freshmen class, and number of male and female veterans students. After controlling for time trends and institutional characteristics, it will be tested whether or not, *ceteris paribus*, an increase in veteran enrollments at any given institution is correlated with either an absolute or relative decrease in female enrollment.

Peripherally, other questions are also addressed in this inquiry. First, the long-term benefits and consequences of higher education for women during this era will be observed, so as to identify the opportunity costs of females not being able to go to college. Had more females been able to attend college during this time, more positive spillover effects for females with a college education may have resulted, including better health and better educational opportunities for their children. It is also important to remember that while being less likely to be able to attend college may not have directly harmed the careers or economic fortunes of females, such a crowding out may have resulted in a change in the "marriage market" for females, disallowing them to marry the well-educated man they otherwise would have been able to meet on a college

campus. Finally, using the institutional level dataset, the changing scope of higher education institutions as they struggled to accommodate the influx of veteran students during the second half of the 1940s, complete with establishment and the rise of the junior college, is documented.

CHAPTER TWO

FEMALES AND THE DEMOCRATIZATION OF HIGHER EDUCATION INSTITUTIONS IN THE FIRST HALF OF THE TWENTIETH CENTURY

"I would found an Institution where any person can find instruction in any study."

Ezra Cornell, 1868

The Democratization of Higher Education in America

While the function of higher education had traditionally been to both train and socialize privileged males to become leaders within the upper classes of society, this meaning began to change around the turn of the 20th century. As higher education became more research-oriented and vital to the workings of the national economy, it transformed from a privately financed system to one more publicly supported, and in the process became more accessible to male and female students from more varied backgrounds.

By the late 1800s, scientific inquiry was becoming increasingly more narrow and specialized, allowing certain aspects of higher education to become more pragmatic, vocational, or technical in its intent. This process, in turn, converted the primary function of higher education institutions from collegial centers of study in the classics and humanities into knowledge-driven institutions serving as engines of economic growth. Moreover, with the rise of the publicly funded high school, the number of secondary school graduates increased rapidly during the early 20th century. More secondary school graduates necessarily meant that more students, from a greater spectrum of backgrounds, would be academically prepared to pursue higher education (Goldin, 1994).

As Goldin and Katz (1999) describe, the "formative years" of higher education, roughly spanning between 1890 and 1940, were characterized by parallel developments in the specialization of scientific inquiry and the growth of the research university coupled with the dramatic rise of publicly funded institutions of higher education. Research universities became the de facto standard in higher education, as they offered a combination of research and teaching that was inherently more advantageous to the multifaceted aims of contemporary educators. Moreover, public institutions were more fitted to adapt to the changes required of

higher education at the time, as they possessed the resources provided by state governments to successfully navigate and fulfill the necessary transition from teaching college to research center. Increasingly, smaller private schools found themselves struggling to compete with the resources and breadth of disciplines that public research institutions were able to offer, and as such, enrollment levels would began to lag at private institutions relative to public institutions during this era.

Moreover, public institutions of higher education allowed the collegiate experience to become increasingly pluralistic after World War I and into the 1920s; publicly supported state and city institutions of higher education provided an abundance of non-traditional, middle-class individuals with the opportunity to experience a collegiate education for the first time in history (Solomon, 1985, 142). Eschewing the prevailing trend of having students of Protestant backgrounds comprise the majority of students enrolled in higher education institutions, a large increase in the number of Catholics, Jews, and Blacks pursuing higher education occurred due to the rise of public institutions of higher education.

Thus, due to rapidly escalating public support for higher education, increased availability of students capable of performing college-level work, and the recalibration of the higher education institution as a center for research and knowledge-creation, institutions of higher education were increasingly espousing "democratic features" more than a decade before the dawn of World War II. It is perhaps surprising to realize that these are the very same "democratic features" of higher education that have already been attributed to the 1944 G.I. Bill by the American Legion's advocates and today's popular historians. In this light, both parties have instilled an incredibly strong and positive cultural consensus regarding the effects of the G.I. Bill that to a large extent is unwarranted given the pre-existing trends that were already present within higher educations.

At best, the popularizers of the G.I. Bill may be described as overzealous, while at worst they could be characterized as possessing a dogmatic and overblown reverence for a piece of legislation that, while successful and influential, had nowhere near the impact that popular mythology claims it did. It is important to keep in mind that merely 35 percent of the returning veterans from World War II utilized the educational component of the G.I. Bill, and it has been estimated that only 15 to 20 percent of those veterans *would not* have gone to college had it not been for the education subsidy provided by the legislation.

The G.I. Bill, in subsidizing the tuition costs to those veterans already planning on returning to their schooling, ultimately served its purpose of helping the United States readjust to a peacetime economy without the pains of mass unemployment. At the same time it also provided the impetus to go to school to a much smaller fraction of returning veterans who otherwise would not have had the ability to pursue higher education. In this process, the bill placed veterans from different backgrounds onto college campuses while promoting the growth and spread of easily accessible public institutions of higher education.

Therefore, if anything, the G.I. Bill, by propelling returning veterans into higher education, acted to selectively reinforce pre-existing trends that had already been motivating the "democratization" of higher education in America for quite some time during the postwar era. Yet, might the flood of returning veterans to college campuses nationwide and the legislation that sponsored such a phenomenon have had detrimental effects on the educational opportunities of females? Could a piece of legislation that has been popularly heralded as one of the most "democratic" in the nation's history, have influenced a "de-democratization" in the higher education of women during this time?

Females in American Higher Education – A Short History

For approximately the first 250 years of higher education in America, the higher education of females was considered a secondary aim to that of males. While a very small percentage of women from the upper classes always sought higher education as a finishing school of sorts, historically the most common form of higher education for females had been the teaching college, which sought to prepare women to become grammar and secondary school teachers. The teaching college was long considered a distinctly different type of higher education experience than the traditional collegiate or university experience. Especially in the nineteenth century, most teaching colleges did not provide degrees to their students, but instead would provide certificates of completion after one or two-year long programs.

Even though the higher education of males was considered a higher priority than that of females, enrollment totals between the sexes were remarkably similar. After including teaching colleges in the calculation of enrollment totals, the enrollment of female students did not markedly differ from the enrollment of male students in higher education before 1910. In fact, during this period female enrollment totals as a percentage of the college-aged population were never less than 85 percent of the equivalent statistic for men, and movements in the female statistic often exactly mirror those in the male statistic (Goldin, 1997, 51).

As the size and scope of higher education grew in the early decades of the twentieth century, and in conjunction with certain other societal trends, female students found themselves in the same company as their male peers in enjoying the unprecedented growth of American higher education institutions. Indeed, women would not be limited from enjoying the same "democratic" developments that their male counterparts experienced in higher education

between 1890 and 1940. As early as 1910, fully 73 percent of all institutions of higher education were open to women, 80 percent of which were coeducational (Newcomer, 1959, 37).

Several factors contribute to the rise of females in higher education in America. With the growth of industrialization and the increasing urbanization of the country around the turn of the century, the gender constructs of society began to undergo a major structural transformation, ultimately acting to provide females with more freedom to become independently and economically engaged with society on their own terms. No longer would the pervading role of females be subservient to husbands and to only contribute to the domestic chores within a familial setting. Moreover, a general decline in fertility rates, an increase in the age of marriage, and the introduction of mandatory schooling for all children all helped to develop more females eligible to benefit from college education, as not only did females have the academic skills necessary for continued study in higher education, but they would also be less restricted by domestic engagements that often started in their late teens or early twenties. And higher education, by further allowing females to become independent and develop an identity outside of the family, served to reinforce this trend. Combined, these factors would contribute to offer more economic choices to females by the turn of the twentieth century (Solomon, 1985, ixx).

By the 1920s it increasingly came to be that it was not necessarily the most well to do families that were sending their daughters to college, but rather those of a professional middling class. This was a class composed of such professions as lawyers, skilled tradesmen, and proprietors. With the blossoming of the research institution during this time, the advent of pragmatic and "scientifically-grounded" educational curriculums in the domestic sciences, business education, and teaching programs appealed to women from these backgrounds and accommodated their growing educational needs. In turn, the very wealthy began to see college as a place to prepare girls to become schoolteachers or clerical workers, and instead, sought to

bypass collegiate education for their daughters by marrying them off to wealthy and educated men. Meanwhile, as had historically always been the case, college was scarcely an option for a female of poor or modest backgrounds during this time. Without tuition subsidies and with a need to work to provide economically for their family, there was no feasible way for low-income females to afford the opportunity to attend college (Solomon, 1985, 91-100).

Of course, the Great Depression to some extent hampered the prospects of college attendance for females, as it did for men. Yet, the Depression did not significantly alter or renege any of the prevailing trends occurring within the higher education of the American female. If anything, financially speaking, female students during the pre-Depression period were increasingly expected to contribute to their own education, with 32 and 40 percent contributing at least in part to their education at private and public institutions, respectively (Solomon, 1985, 147). The fact that females contributed to their own educational expenses suggests that female students saw their education as an investment and expected to financially gain from their educational pursuits. Indeed, many middle-class families hoped that their daughters would be able to find occupations in offices or as teachers after their collegiate education.

In this way, college educated women were becoming accepted into mainstream America. In assessing the shifting historical trends in the dilemma of balancing between career and family that traditionally confronts college-educated women, Goldin (1997) finds that of those few women (and men as well) who graduated from college in 1910, more than 30 percent of the cohort never married, and approximately 50 percent of the cohort of women never had children. Yet, by the dawn of World War II, these statistics would change as college educated females were socially allowed to have both a family and a career. Five times as many women attended college as compared to thirty years earlier, and of those who attended, only ten percent did not have children by their late 40s. Across the nation, popular "marriage bars" to hiring married

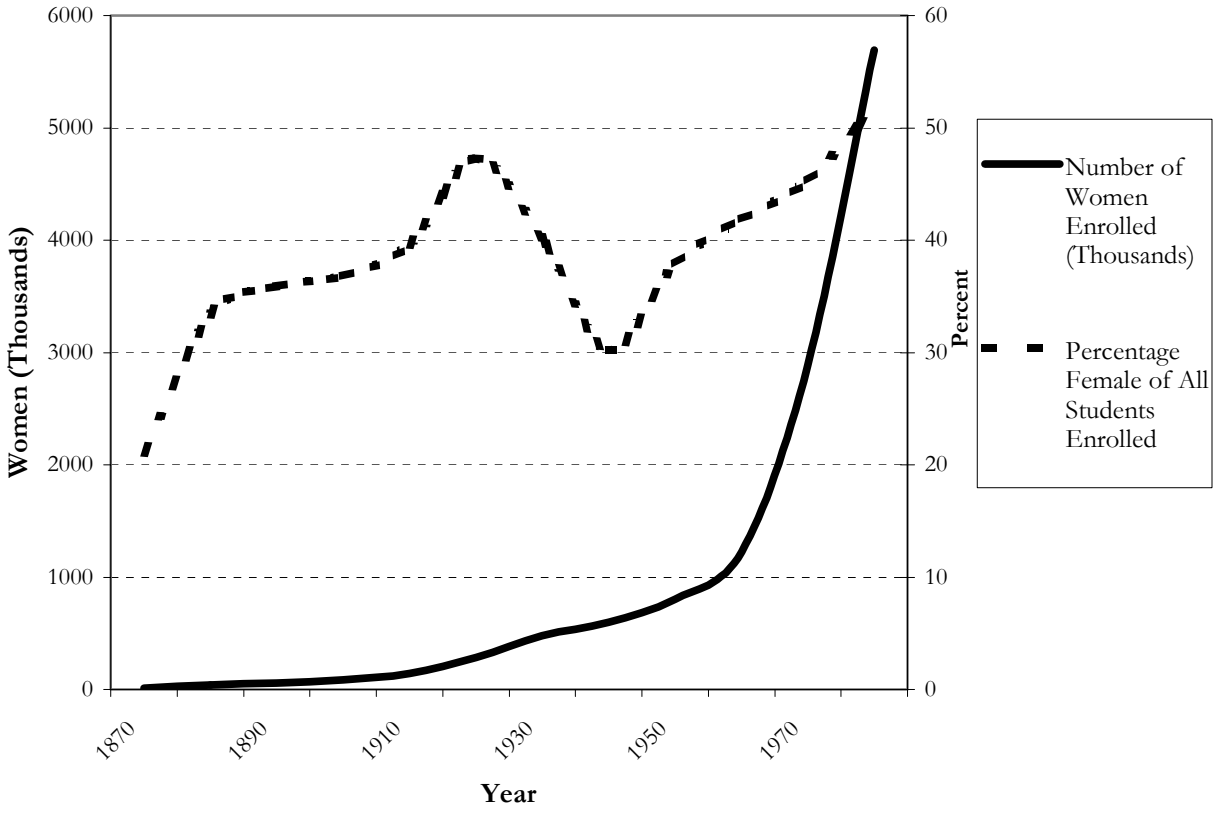
females were being repealed, and even if a college-educated woman chose not to work after marriage, as most did, they often would be employed for several years before tying the knot. As Goldin states: "College women had become part of the American mainstream in various ways. College was considerably more open to the masses, college women were marrying at a greater rate, and they were bearing far more children when married." (Goldin, 1997, 38)

Thus, as women became both socially and economically more inclined to attend college, higher education institutions were simultaneously undergoing drastic changes of their own in terms of their size, scope, and funding sources. These developments would ultimately serve to allow more open access to higher education institutions, while enriching the pragmatic and vocational aspects of a college education. And as a result, women would be afforded increasing opportunities to obtain a college education in the first half of the twentieth century.

Increases in the enrollment of females in higher education directly correlates with the rise of the public research institution and other social trends (decreasing fertility, increasing high school graduation rates, et. al.) that occurred during this time. Figure 1 depicts this inception of the remarkable growth in female college students. Beginning in 1910 and especially in 1920, female enrollments began to markedly deviate from their previous trends, with the absolute enrollment of females in higher education institutions nearly doubling from 85,000 to 140,000 between 1900 and 1910, and then more than doubling again to 283,000 students in 1920. By 1940 over 600,000 female students were enrolled in higher education. Percentage wise, female students as a fraction of the total female college-aged population grew in the years leading up the 1920s before declining throughout the 1920s and the Great Depression. Generally speaking, a relative maximum occurred in the enrollment of women in higher education during this time,

with women students as a percentage of total enrollments surging to 47.3 percent in 1920 (Solomon, 1985, 143-145).[6]

Figure 1
Women In Higher Education, 1870 - 1980



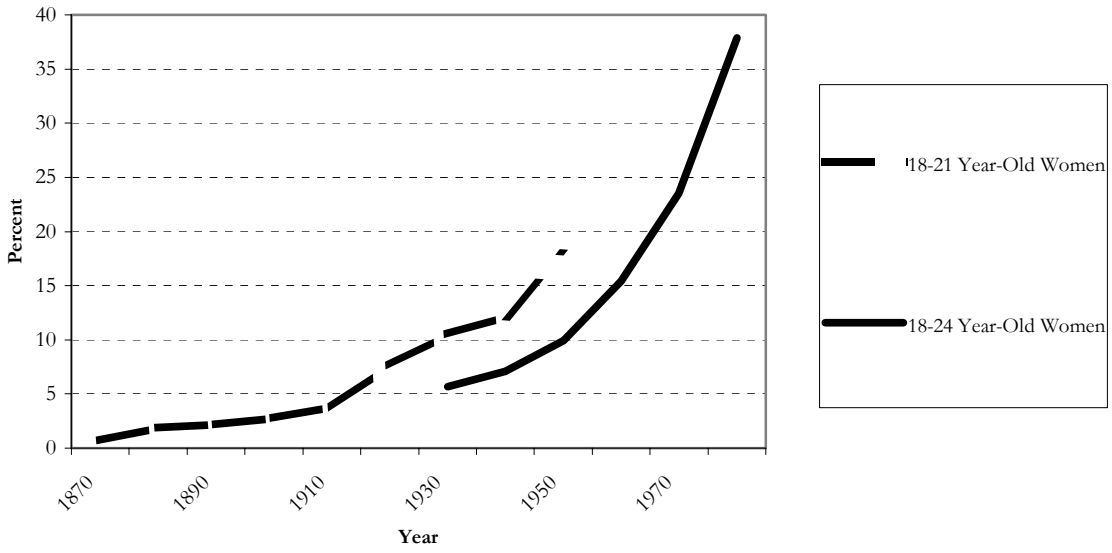
(Solomon, 1982, 64)

Figure 2 depicts the percentage of females in higher education relative to the total number of college-aged females, effectively presenting the same trend of increasing female enrollments in higher education as observed in Figure 1. Adapted from Solomon (1985, 64) these percentages are found by dividing total female enrollment in higher education by census population estimates for the total number of college-aged women ages 18-24 or 18-21, depending on data availability. Before the twentieth century, a negligible amount of growth

[6] As this data is only reported every 10 years, the term "relative maximum" should be utilized cautiously.

occurred in the absolute percentage of college-aged women attending college. For instance, between 1880 and 1900, this percentage figure rose by an insignificant 0.9, as the percentage of all college-aged females attending college slowly increased from 1.9 percent to 2.8 percent. This trend would markedly change after the experience of the First World War; between 1910 and 1920 the percentage of college-aged females attending college more than doubled from 3.8 to 7.6 percent. Decelerating somewhat in growth during the 1920s and the Great Depression, the percentage of all females aged 18 through 21 attending college approached 12.5 percent by 1940.

Figure 2
Percent College-Aged Women Enrolled in Higher Education Institutions, 1870-1980



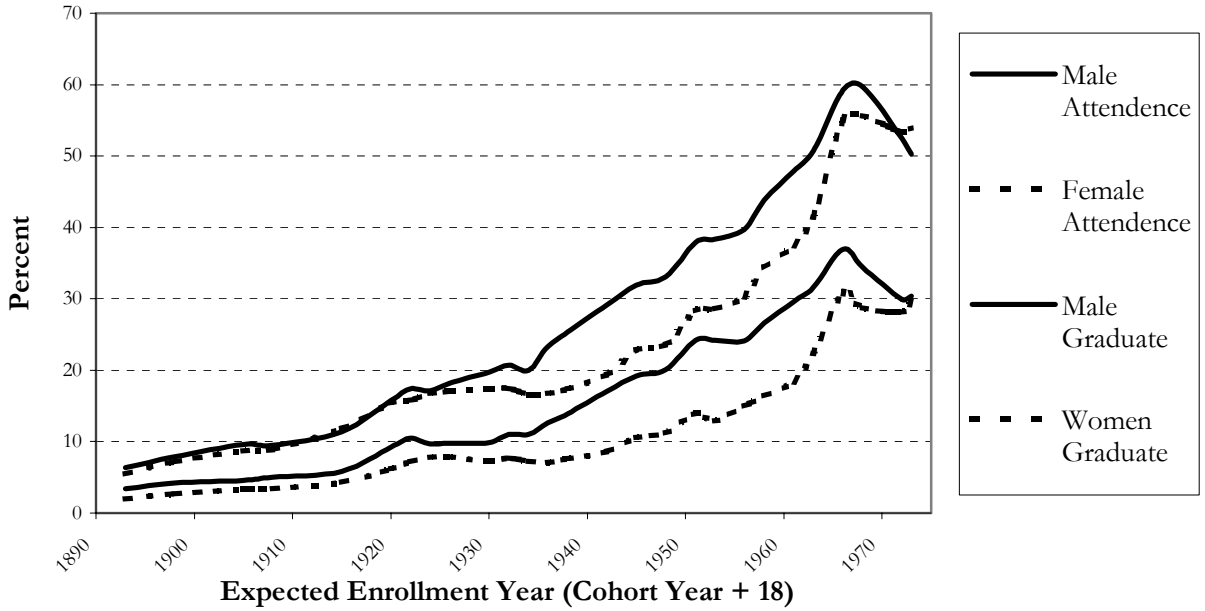
(Solomon, 1982, 64)

In assessing the percentage of females in the total population that enrolled in higher education, Goldin (1997) employs a dataset that results in a slightly different metric to the one provided in Figure 2. By utilizing U.S. Census survey data taken of men and women of various ages and who were born between 1875 and 1955, Goldin is able to establish an array of birth cohorts and tracks the percentage of each cohort reporting that they ever attended college or graduated from college. Limited to white students (and not blacks or students of other racial

backgrounds) and thus elevating the proportion relative to the true population mean, this statistic also differs from that of Solomon's (1985) in that it provides a birth year cohort snapshot as opposed to a snapshot of academic year enrollment levels relative to Census population estimates. When used to analyze yearly enrollment figures, birth-year cohort calculations fail to accommodate for the fact that some women attend college as non-traditional students, and do not enroll in the predicted year of enrollment – 18 years after their birth.

Taken together, these specifications necessitate that Goldin's percentage of a cohort attending college results in a decidedly higher statistic than Solomon's snapshot of total enrollment levels relative to an estimate of the college-aged population. For instance, Solomon's calculations find that only 10.5 percent of all college-aged females were enrolled in institutions of higher education in 1930, while Goldin's research demonstrates that 17.4 percent of the white female cohort born in 1912 (and thus assumed to enroll in college in 1930) attended an institution of higher education, with slightly more than seven percent of the same cohort graduating from college. While this difference may propagate an ambiguity about the actual density of females in higher education, it must be remembered that there is a large dissimilarity in the two statistics, as they are calculated under two distinctly different methods. Yet, they both serve to reflect and highlight the underlying developments in females' higher education at the time. The same trends are present in Goldin's calculations as they are in Solomon's calculations; female enrollments as a percentage of the total population rose rapidly before World War I before relatively stagnating between 1920 and 1940.

Figure 3
White Higher Education Enrollment By Birth Cohort (1875 - 1955)



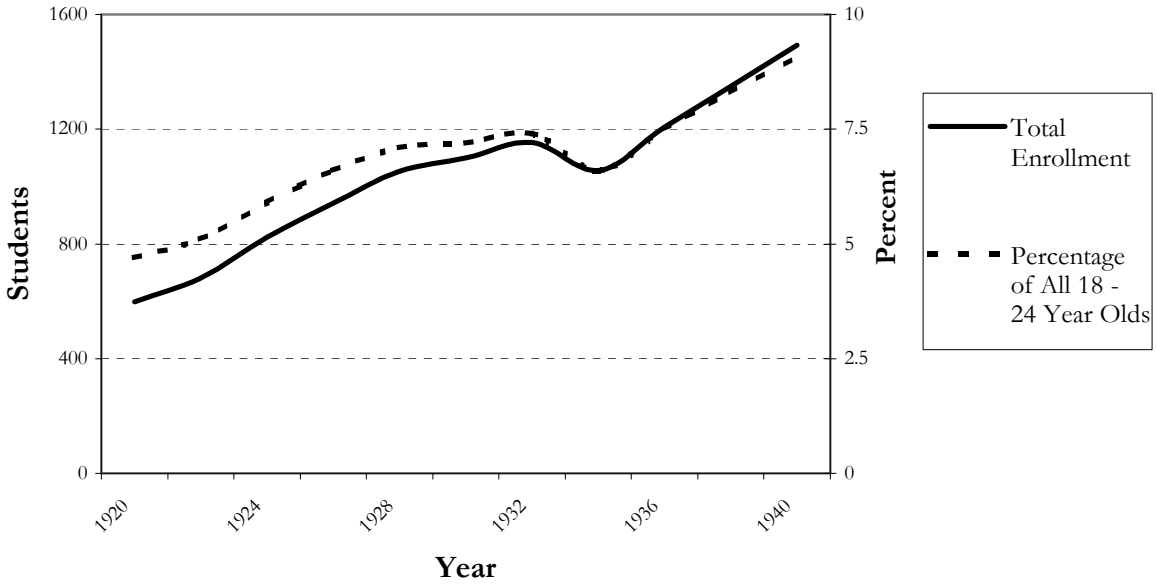
(Goldin, 1997)

Starting in the 1920s a divergence in the total enrollment of males in higher education relative to that of females developed. Corresponding with the postwar boom in production and growth that occurred in the 1920s, male enrollments in higher education began to increase at a rate greater than females throughout the decade.

Growth in the enrollment levels for both males and females sagged during the worst years of the Great Depression, as higher education often became a luxury that many otherwise well-off families could not afford under the weight of general economic atrophy. Figure 3 distorts this experience due to the fact that a lot of males who were born in a birth cohort that would be expected to attend college during the late 1930s or early 1940s ended up enrolling in college after World War II due to the intrusion of the war into their collegiate plans as well as the subsidy provided to them in the G.I. Bill . As Figure 4 demonstrates, absolute enrollment of combined male and female student enrollment decreased during the depression years of 1932

and 1934. While enrollment levels climbed until 1932 to 1,154,000, they declined by over 100,000 to 1,050,000 students in academic year 1934-1935 before regaining momentum. Meanwhile, students in higher education would also suffer a setback in relative terms. After reaching a relative maximum of 7.4 percent, the percentage of students in higher education relative to the number of college-aged individuals (ages 18-24) dropped back to the 1926 level of 6.6 percent in 1934.

Figure 4
National Enrollment Totals, 1920 - 1940



(Biennial Survey of Higher Education, 1942)

Moreover, self-support became a near necessity during this era, as even relatively well-off students sought jobs to cover tuition expenses, and educators clamored for public and institutional assistance for the nation's most talented students (Solomon 1985, 147). A Depression-era precursor to the G.I. Bill existed in an educational aid system that was part of the New Deal package of legislation. Sponsored by the federal government and administered by

the National Youth Administration, this need-based program spent over $93 million to assist over 620,00 college students between 1935 and 1943. Taking the form of grants and work-study funds, aid amounts averaged $15 per month to qualified students. And while only one in eight students were eligible for aid, nearly 45 percent of those recipients were women, in line with the overall relative enrollment levels for female students at the time.

But, in general, this legislative directive was hardly able to help alleviate the dire financial situation the students found themselves in during this time. Unsurprisingly, the higher education of females was disproportionately affected by the Depression. If a family had to choose one family member to support to go to college, it would most likely be a male, as a male child would have a much higher likelihood of obtaining a job with a college degree, especially under the confines of a depression that shunned many women back into their traditional domestic roles or forced them to seek to subsistence-level employment (Solomon 1985, 147-8).

Towards the end of the 1930s – with the gradual end of the Great Depression and the impending outbreak of World War II - females still held a sizeable presence on college campuses, but this presence was waning relative to the status of males on campus, and the golden era for females on campus that existed prior to the Great War had long since passed. Due largely to the landscape of the economically heady 1920s and the structural demand problems of the 1930s, the growth of female students in higher education followed behind that of men, both relatively and absolutely speaking.

Still, the nation's colleges and universities were more open and accessible to women (as well as men) than they have ever been before, and similarly, women sought and obtained higher educational opportunities at record levels. The transformations that the nation's system of higher education had undergone over the previous 40 years served as a catalyst to these developments. As institutions of higher education increasingly became publicly supported,

research-orientated, and pragmatically geared, they reflected and facilitated the increasing movement of females into higher education. Middle and upper-middle class women who sought a job or a career before deciding to marry and raise a family understood the growing importance of a vocational, technical, or collegiate experience and the impact that it could have on their future endeavors.

At the dawn of World War II higher educational opportunities for females served second only to labor market experience as the largest single motivator for the social and economic integration of gender roles into American society. Paradoxically, World War II would at first motivate even greater changes in the social and economic roles for women, but the impending influx of veterans returning to American society at the end of the war would serve to stunt the advancements that had been made over the previous five years. If the progress that had been made in the social and economic status of females was going to withstand the brunt of the returning veterans, specific legislation explicitly promoting the integration of women into mainstream social and economic roles would have had to have been enacted. Yet, in higher education, the G.I. Bill would further propagate such detrimental effects upon the educational, economic, and social prospects of women. What remains to be documented are the quantitative effects that the G.I. Bill and the enrollment of veterans at institutions of higher education had upon the women who sought higher education during the postwar era.

Trends in Higher Education Enrollments, 1939– 1954

As previously mentioned, the experience of World War II not only brought a large shock to the labor force participation of females, but it also drastically affected the relative enrollment rates of females in higher education. Female enrollment as a percentage of total enrollments

increased rapidly and substantially during the war years before falling just as quickly in the postwar period. For instance, at Cornell University, an institution where females historically composed around one fifth of the student population before the war, females comprised close to 60 percent of the entire student body during the 1944-1945 academic year before contributing a mere 18 percent to the total enrollment level in 1950-1951.[7]

Using data from the U.S. Office of Education's Biennial Surveys of Education, nationwide aggregates can be created to document the changing enrollment patterns that occurred in higher education during this time frame. For the purposes of this study, the 15-year period between academic years 1939-1940 and 1953-1954 is scrutinized. This time frame provides insight into the prewar trends without foraying into the deepest years of the Depression, while also offering eight post war years so that the medium-range effects of the G.I. Bill and the influx of males into higher education may be documented; the last veteran of World War II to utilize the educational benefit within the G.I Bill did so in academic year 1953-1954.

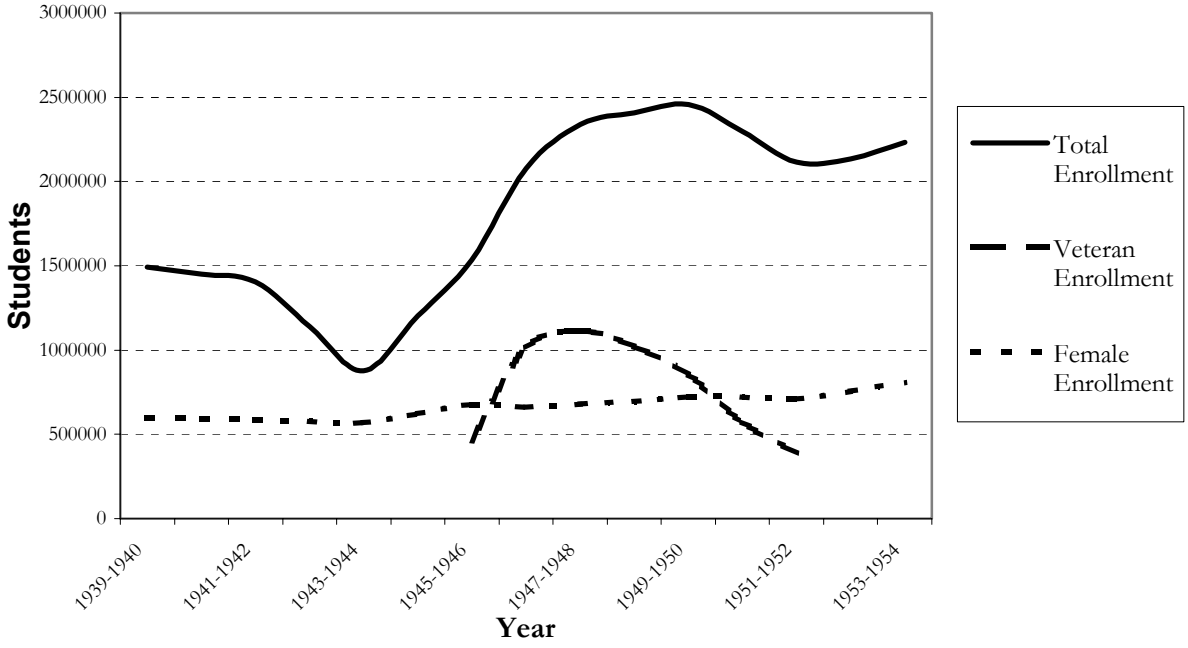
Figures 5 and 6 present both absolute and relative enrollment levels between 1939 and 1954. [8] Specifically, they showcase three trends that assist in explaining the dynamics at work behind these numbers. First, during the war many males had to become soldiers in lieu of pursuing higher education. This fact accounts for the absolute decline in enrollment levels during the first half of the 1940s and explains why the females were able to encompass more than 60 percent of all college students in academic year 1943-1944. As seen in Figure 5, while the absolute enrollment of women declined slightly in the early years of the war (a loss of roughly 20,000 female students, from 586,000 to 568,000), the absolute enrollment of males

[7] Based on author's calculations from data available in "Higher Institutions." *Annual Report of the Education Department.* Volume 2. Statistics. (Albany: The University of the State of New York, 1940-1955).

[8] Data is obtained from the U.S. Office of Education's Biennial Survey of Higher Education, various years. Prior to 1944, enrollment totals were only reported every other year. In the off years during which higher education institutions were not surveyed for their enrollment totals, the average of the two adjoining years is used. Enrollment is classified as full-time enrollment in any degree-granting program (undergraduate or graduate) at any point during the academic year, and does not only refer to fall starts.

precipitously declined by over 500,000 students between academic years 1941-1942 and 1943-1944. As a result, the relative enrollment ratio of women in higher education climbed to unprecedented new highs by academic year 1943-1944. In the two years following America's entry into World War II, females as a percentage of all students in higher education increased by approximately 25 percent - from slightly more than 40 percent of college attendants in 1941-1942 to close to 65 percent of all students by 1943-1944.

Figure 5
Enrollment Levels - Nationwide, 1939-1954

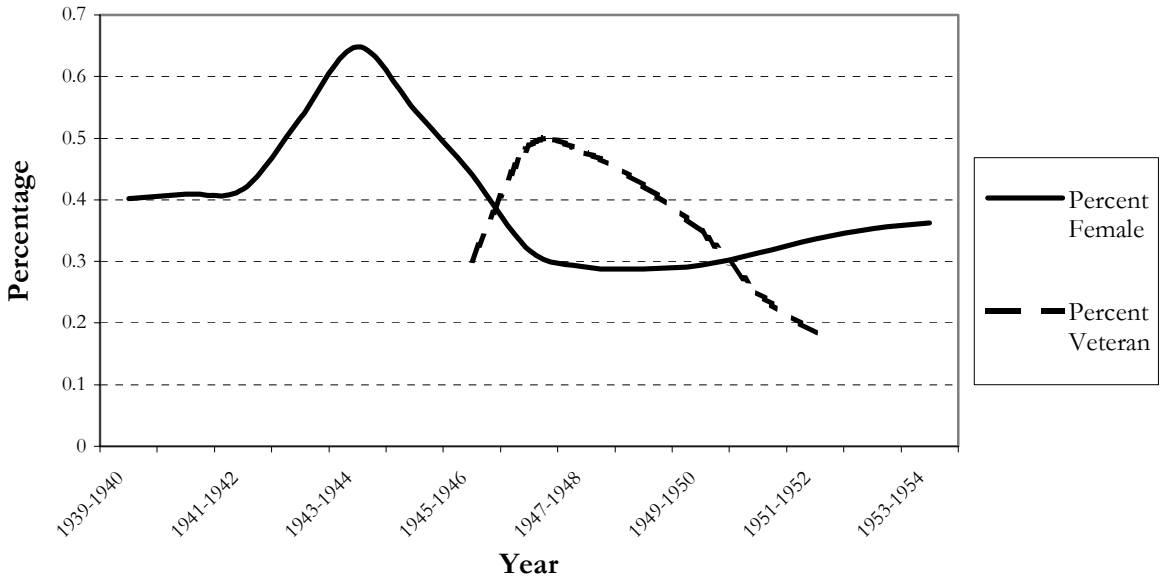


(Biennial Survey of Education, Various Years)

Secondly, motivated in part by the G.I. Bill, there was a large influx of veteran students into institutions of higher education directly after the war. Primarily male, these returning veterans were directly responsible for the large drop-off in the relative enrollment of female students between academic years 1943-1944 and 1947-1948. By 1947-1948, over 1.1 million veterans were studying within the nation's higher education institutions, comprising

approximately 50 percent of all students and representing nearly 70 percent of the entire number of male enrollments. As a result, total enrollment of all students nationwide almost tripled to 2.3 million in 1947-1948, up from 877,000 in 1943-1944.

Figure 6
Enrollment Percentages - Nationwide, 1939-1954



(Biennial Survey of Education, Various Years)

Finally, and perhaps most importantly for the purposes of this analysis, the appreciable increase in female enrollment levels that was experienced during the war years stagnated during the immediate prewar period. After slightly decreasing in tandem with the corresponding decrease in male enrollments during the economically difficult early years of the war (1941–1943), female enrollments increased by close to 110,00 students by academic year 1945-1946, jumping from 568,631 female students in academic year 1943-1944 to 676,869 in 1945-146 – an enrollment level that stands 80,000 female students above the prewar level of 585,464 in 1941. Yet, during the two years immediately following the end of World War II, female enrollment levels would barely change; during academic year 1947-1948 678,977 females enrolled in

institutions of higher education, an increase from academic year 1945-1946 of only 2,108 female students. In fact, the absolute enrollment of females actually decreased between academic years 1945-1946 and 1946-1947, declining by close to 20,000 students as 661,00 females were students in higher education institutions in the year immediately following the end of the war. Moreover, the absolute enrollment of females remained stunted throughout the postwar era; by academic year 1951-1952 the absolute enrollment of females students in higher education stood only roughly 30,00 students higher – at 711,222 - than what it did in 1945-1946. Not until academic year 193-1954 did the absolute number of females in higher education rise above 800,000 students a year.

Taken together, after experiencing an unprecedented high in the relative enrollment rate of females in higher education during the war, female opportunities in higher education diminished during the postwar era. In the wake of returning veterans who sought higher education in record numbers as well as desired to settle down and start a family, females would find their relative enrollment level in institutions of higher education lower than at any point since the end of the 19th century. While females had composed over 60 percent of all students in academic year 1943-1944, by the end of World War II they would comprise less than 30 percent of all enrolled students in higher education – by 1948-1949 only 28.8 percent of all students were female. Although females represented more than 40 percent of all students in higher education before the war and would be in the majority on most college campuses for most of the war years, nine years after the end of the war females would comprise only 36 percent of all enrolled students in institutions of higher education.

Curiously, while absolute enrollments in female higher education accelerated during the wartime years until academic year 1945-1946, females as a proportion of all students in higher education peaked in academic year 1943-1944. This suggests that many males who were not

fighting in the war effort also began increasing their enrollments in higher education towards the later years of the war. In this light the absolute increase in female enrollment levels towards the end of the war period is less remarkable – female students in higher education were not making any advance relative to the status of male students at the time, rather they simply were increasingly entering college in response to the comparative affluence of the final years of the war – just as non-veteran males students were as well. As Figure 5 demonstrates, of the 300,000 new students that enrolled in institutions of higher education between academic years 1943-1944 and 1944-1945, a disproportionate number of these students were male - only 20 percent, or 60,000 students, were woman.

Therefore, after emerging out of the bleak years of the Depression and saving a reasonable amount of income during the early years of the war, families were able to increasingly afford to send their children –males as well as females – to college towards the later years of the war once it became clear after 1943 that the Allied powers were ultimately going to come out of the war victorious. And while female enrollment totals in higher education were reaching unsurpassed highs by the end of World War II, this does not indicate that a marked new trend for females in higher education had developed during the course of the war.

Instead, female enrollments in higher education reflected the pervading trends occurring in the enrollment levels of all students in higher education institutions during the first half of the decade – they stagnated during the war years before accelerating during the later half of the war. The fact that females comprised such a large majority of all enrolled students by 1943-1944 does not indicate any profound shift in the wartime experience of females in higher education – it merely reflects the fact that so many males had to forego their studies to contribute to the war effort. Other than the reality that female students were more likely to be surrounded by other female students within the classroom during the war, the wartime opportunities for females in

higher education did not markedly change in relation to pre-existing trends; the propensity to enroll in higher education institutions, as reflected in the absolute enrollment of female students, remained remarkably constant during the wartime years, and only increased slightly towards the end of the war, as it did for male students as well. The immediate experience of World War II does not seem to have had any profound impact on female's relative status in higher education.

Yet, the experiences of females in higher education after the war does suggest that something changed in the opportunities afforded to women in higher education. As the absolute enrollment of females in higher education stagnated and the proportion of females in college dipped even lower as the postwar era progressed, the relative status of females in higher education declined. In comparison to opportunities that were offered to males, who were enrolling in colleges and universities in unprecedented numbers after returning from overseas and taking advantage of the higher education components of the G.I. Bill, it is clear that, at least through these aggregate numbers, females were less likely to either seek or be able to obtain higher education during the immediate postwar years.

At the very least, the growth of female students in higher education was inhibited during the postwar years. Evidence demonstrates that the absolute enrollment of females in higher education decreased in the first academic year immediately following the end of the war, and while 100,000 new female students were added in the two academic years between 1943 and 1945, it would take another eight academic years for nationwide female enrollments to gain another 100,000 female students. However, a more rigorous analytical approach is necessary to partial out whether or not females were actually less likely to enroll in an institution of higher education during the postwar years. Only after controlling for all other possible explanations may it be asserted that females had a lower propensity to enroll in college after World War II than they did during the war.

CHAPTER THREE

NLSMW MICRO DATA AND THE EXPERIENCES OF INDIVIDUAL FEMALES

1940 - 1955

NLSMW Micro Data and the Birth-Year Cohort Trends

One way to motivate this inquiry is to dissect the experiences of individual females born between 1922 and 1937 – the years in which somebody would have to be born if they were to have possibly enrolled in an institution of higher education between the years of interest in this study – 1940 through 1955. By looking at the experience of each birth-year cohort between 1922 and 1937 and the percentage of females from each cohort that enrolled in college the relative enrollment trends before, during and after the war – on a year-to-year basis – can be inferred by extrapolating the expected enrollment year for any individual based upon their birth year. This has never been done before on a year-to-year basis; Goldin (1994) only looked at the experience of five birth-year cohorts during this time frame – 1938, 1941, 1945, 1948, and 1951. Moreover, after controlling for all demographic factors and other variables that can possibly affect a female's propensity to pursue a collegiate education, if females are less likely to enroll in a college or university after the war than they were during the war, than this would prove to be almost certain evidence that females were less likely to either seek or be able to obtain higher education during the immediate post-bellum years.

The National Longitudinal Surveys, first commissioned in 1967 by the United States Department of Labor under the Bureau of Labor Statistics and conducted by the United States Census Bureau provides an opportunity to perform this type of analysis. The National Longitudinal Study of Mature Women (NLSMW) is a multi-year study of 5,083 women that were between the ages of 30 and 44 when the study was first conducted in 1967. Designed to provide insight into the experience of American females attempting to balance the roles of mother, homemaker, and labor force participant, the sample was created to reflect the entirety of the United States population. To allow for the independent analysis of certain interesting

subgroups, such as blacks, the researches purposely over-sampled certain groups of females. In alternating years following the initial survey, respondents were surveyed with follow-up questions to see how their lives were changing, as well as with new questions that the researchers deemed interesting.

National population estimates for these data may be derived using NLSMW provided population weights. Each sample case for each year is assigned a basic weight that is the reciprocal of the final probability of selection. This probability reflects the differential sampling by subgroup within each year that the survey is conducted. For instance, the base-year weights for all those interviewed are adjusted to account for the overrepresentation of blacks in the sample as well as for persons selected after screening who were not interviewed in the initial survey. In subsequent years, population weights are adjusted to accommodate the fact that not all respondents completed the survey for each year that it was conducted. The weighting adjustment is made separately for each of 16 groupings for these data - based upon the four Census regions (Northeast, North Central, South, and West), urban/rural residence, and race (nonblack/black). By weighting the descriptive statistics of the 5,083 respondents by the sample weight, the true U.S. population mean at the time can be estimated (NLS of Mature Women User's Guide, 2001, 1- 24).

The first time a respondent's college education was explicitly asked in the NLSMW was in 1977, when the respondent was asked whether or not they had ever attended college. Unfortunately, due to the large number of non-responses during this year, only 1,663 respondents answered this question – less than a third of all respondents in the survey. However, the topic of college is indirectly approached during a question in the 1967 survey, the first year the survey was conducted, when respondents were asked the highest "grade" of schooling ever attended, and respondents were able to list up to "grade 18" – corresponding

with six years of college or more. Only two respondents did not answer this question, creating 5,081 responses in the sample pertaining the highest grade-level that a survey respondent achieved, 5,066 of which were born between 1922 and 1937.

Based upon the responses to this question, it is assumed that a respondent attended college (either a four-year, two-year, or technical school requiring a high school diploma) if she answered 13 or higher for the highest grade attended, and that she never attended college if she responded with grade 12 or less. Hence a binary variable can be coded as to whether or not a respondent ever enrolled in college. There is the chance that some respondents found a slight ambiguity in the grade-level classification system, and hence that some people who claimed to have 13 years of schooling didn't actually enroll in an institution of higher education. It should also be noted that attending a certain grade level does not necessarily infer completion of that grade level. Another question asked in 1967 inquired as to whether or not the respondent completed the highest grade that they attended. Thus, in order to be considered a graduate of either high school or college a respondent would have had to have attended and completed either grade 12 or 16, respectively. However, to be considered as having ever enrolled in college, a respondent would have only had to have attended grade 13, but not necessarily complete it.

To proxy for the year of expected enrollment, the respondent's year of birth is used. On average, birth-cohort years correspond with an enrollment year that is 18 years after a respondent was born. Included in the 1977 NLSMW survey was a question that asked respondents to list the month and year in which they finished their last year of schooling. Using this information in combination with the year and month that a respondent was born, one can calculate the age at which somebody completed their schooling. Because this information is not

available for all of the 1967 respondents, the dataset is unable to be abridged to only those respondents that attended college at a traditional age.[9]

Based on the calculation from the 1977 survey, a female respondent who attended college and only completed the first year of her studies – up until grade 13 – was 18.6 years old at the time of the completion of her education. Meanwhile, of those respondents that only completed 12 years of education, the average age of the respondent upon completion of schooling was 18.0. Therefore, on average, it is prudent to presume that somebody who was born in 1922 would be expected to be most likely to pursue higher education in academic year 1940-1941 – provided he or she enrolled in college at all. In this fashion, birth-year cohort information may be obtained for all years in which a sizeable number of respondents are present in the study – birth-year cohorts 1922 through 1937. Therefore, this study significantly expands upon Goldin's previous research, which only presented five birth-year cohort calculations during this time frame.

Several limitations are present in the use of birth-year dummy variables to discern for year-specific differences in the propensity to enroll in higher education. First, they are only able to serve as a crude proxy for the actual year in which a female would have been most likely to attend college. For instance, while a female born in 1927 may be expected to first enroll in college at the age of 18, thus making 1945 as the anticipated enrollment year, she in actuality may have enrolled in college when she is 17 or 19, enrolling in either 1944 or 1946. Also, she may have been placed in with a different age group in school depending on the month in which she was born. However, most age/grade cutoffs traditionally fell between November and January, thus establishing the fact that a year in which a respondent was born is the most important

[9] Even if this were possible, it would not make intuitive sense to perform this action in this study, as we are also interested in scrutinizing those individuals who did not go on to college. Therefore, by assumption, all females are expected to be most likely to enroll in college at the traditional age of 18, thus establishing the expected enrollment year of any respondent to be 18 years after they were born.

determinant of a respondent's educational cohort and expected year of possibly enrolling in an institution of higher education.

These factors serve to introduce bias into the ability to assert that females were less likely to enroll in any given year vis-à-vis another one. However, what can be asserted is that, on average, females born in a certain year were less likely to enroll in college, and that, on average, a female born in that year was most likely to enroll in college 18 years after her birth. Of course, what may feasibly happen is that a female who sought to enroll in college during the traditional year in which she would be expected to enroll may delay her enrollment in college for various reasons, and be forced to enroll in a subsequent year. Information on this type of experience is unfortunately cannot be discerned from the NLSMW survey data.

Secondly, another limitation of the use of the birth-cohort year as a proxy for the enrollment year is that there is no way to control for the possibility that certain respondents may have obtained a college education in an untraditional way. Put another way, some of the female respondents may have pursued a higher education significantly later in their lives than they might otherwise be expected to do so. This fact may artificially inflate the enrollment rate for our estimated enrollment years, as it is feasible that some women who obtained higher education did so well into their adult lives. The incidence of this phenomenon is likely small, but would serve to cause a slight overestimation of the respondents' propensity to go to college during the expected enrollment year – some of the respondents presumably first enrolled in college after the expected enrollment year. Assuming that this effect doesn't vary between years - that some birth cohorts were more likely to pursue collegiate studies in a "non-traditional" fashion than

others – the estimation bias in this analysis is consistent across birth cohorts and does not affect the inference upon enrollment year trends as it otherwise could.[10]

Yet, in some ways this statistic is also more telling than aggregate enrollment levels – changes in absolute enrollment levels are cushioned in some respects by a "pipe-line effect," that effectively smoothes out any changes in enrollment propensities in any given year by enrollment propensities in other years. Assuming four-year graduation rates, a change in any given year's incoming class by any magnitude is discounted by 75 percent in aggregate enrollment trends analysis due to the existence of three other class years. Therefore, by looking specifically at individual year-to-year birth-year cohort changes - or the three-year moving averages of such a statistic – a more acute understanding of the trends in female enrollment present during this era may be grasped.

Table 1 presents the percent of respondents surveyed who graduated from high school, enrolled in college, and graduated from college. The number of respondents who were born in any given birth-year cohort is also included, broken down by birth-year cohort as well as expected collegiate enrollment year. Weighted by the population weights provided by the NLSMW, this table presents adequate birth-year cohort information to make strong estimates for the entire nation's population for birth-cohort years 1922 through 1935 – when the number of observations is larger than 250, and mildly robust estimates for birth-cohort year 1936 – when more than 50 respondents were born. Birth cohorts for years 1922 through 1937 correspond to expected enrollment years 1940 through 1955. These birth-year cohorts are outlined by a box.

[10] An additional benefit in using the 1967 NLSMW survey question pertaining to highest grade attained as opposed to the 1977 question explicitly asking about college attendance is that during this ten year time frame respondents might have enrolled in a non-traditional higher education program, thus further increasing the bias in making inferences on enrollment year based upon a birth cohort.

Table 1, Proportion of Females Graduating High School, Attending College, or Graduating From College, By Birth-Year Cohort and Expected Enrollment Year *

Year of Birth	Expected College Enrollment Year	Percent High School Grad	Percent Enrolled in College*	Percent College Grad*	n
1912	1930	100.00%	0.00%	0.00%	1
1914	1932	0.00%	0.00%	0.00%	1
1916	1934	0.00%	0.00%	0.00%	1
1918	1936	100.00%	0.00%	0.00%	1
1919	1937	0.00%	0.00%	0.00%	1
1920	1938	70.91%	37.25%	0.00%	3
1921	1939	0.00%	0.00%	0.00%	4
1922	1940	52.46%	15.57%	2.15%	256
1923	1941	53.44%	15.53%	5.28%	397
1924	1942	55.09%	19.57%	5.85%	368
1925	1943	55.23%	15.43%	5.43%	388
1926	1944	57.19%	19.34%	6.03%	334
1927	1945	55.31%	25.38%	7.99%	354
1928	1946	59.76%	23.77%	7.74%	347
1929	1947	62.48%	18.45%	6.46%	358
1930	1948	64.23%	22.32%	8.19%	309
1931	1949	68.96%	23.37%	8.66%	289
1932	1950	64.02%	21.39%	7.16%	303
1933	1951	66.82%	21.81%	7.15%	307
1934	1952	63.87%	19.18%	7.16%	322
1935	1953	67.70%	24.44%	9.58%	340
1936	1954	64.99%	20.48%	8.98%	328
1937	1955	67.19%	27.96%	8.51%	66
1938	1956	100.00%	100.00%	0.00%	1
1941	1959	0.00%	0.00%	0.00%	
1944	1962	100.00%	100.00%	0.00%	1

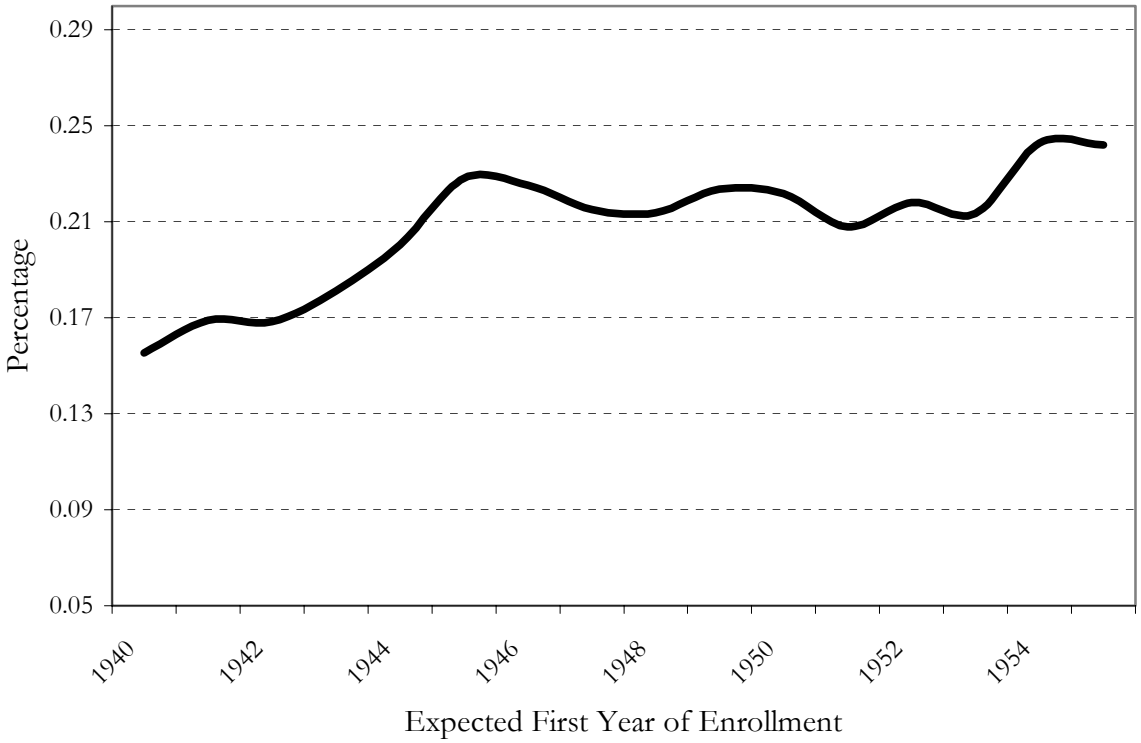
* Weighted by Census provided sample weights.

In general, high school graduation rates progressively increased through this 15-year period, rising from 52.5 percent of all respondents born in year 1922 to 67.2 of all surveyed respondents that were born in 1937. Clearly, females continued to make marked improvements in their levels of secondary school achievement during this era. College enrollment rates, however, are more in line with the trends displayed in the aggregate enrollment analysis; after

increases in the propensity to enroll in college during the later war years, the percentage of women who ever enrolled in college levels off for the birth-year cohorts from the middle years, with the propensity to enroll in college gradually increasing for the later-year birth-year cohorts. These trends mirror the findings of Goldin (1994); Goldin's analysis of the five percent PUMS Census data discerns that between expected enrollment years 1942 and 1956 the enrollment rate of females nationwide increased by over ten percent – the percentage of all females enrolling in college rose from 19.4 to 30.3 percent for the respective birth-year cohorts. Meanwhile, the NLSMW data find that for birth-year cohorts associated with enrollment years 1942 and 1955, the enrollment rate of females increased from 19.6 percent to 28 percent. Finally, the four-year graduation rates for these birth-year cohorts gradually increased over the course of this time frame, only marginally decreasing for expected enrollment years 1950 – 1952 before regaining their footing. It is important to remember that this "lagged effect" exists when scrutinizing graduation rates – changes in the graduation rate may not only be affected by changes in enrollment levels four years earlier, but also by phenomena that may occur while a student is pursuing her studies.

Figure 7 displays a three-year moving average of college enrollment rates for the females in this survey. By taking a three-year moving average of college enrollment rates, the year-specific effects of any given year are smoothed out by the trends that exist in the surrounding years of a birth cohort. In the case of an end year – 1940 and 1955 – the percent is averaged with only the subsequent or preceding year, respectively. A three-year moving average helps to compensate and control for the fact that a respondent born in a particular birth-year cohort may not actually first enroll in a college or a university when she is 18 – enrollment may occur when she is 17 or 19 instead. In this way, some of the "noise" in these calculations is rounded out and the overall historical trends may be more easily discerned.

Figure 7
Percentage of Females Enrolled in College, 1940 - 1955
Three Year Moving Average



As with the individual birth-year cohorts, the three-year moving average is unsurprisingly in line with the analysis of aggregate enrollment trends in the previous section; female enrollment rates remained constant in the early years of the war before rising significant in the later years of the war. Between 1943 and 1945, the expected enrollment rate of females as reflected in the three-year moving average rose from 18.1 percent to 22.8 percent. However, at the war's end, the propensity for females to enroll in higher education diminished somewhat – by 1948 the three-year moving average had fallen by roughly 1.5 percent to 21.3 percent off of a high of 22.8 percent. It would not be until 1954, nearly a decade after the end of World War II,

that the three-year moving average would markedly rise above its previous wartime highs – surging to 24.8 percent.

Clearly, the enrollment history of females in higher education as reflected by the propensities of various birth-year cohorts to enroll in a college or university tells an interesting story about the trends in females' collegiate enrollment that existed during this era. The fact that female enrollment rates not only stagnated but declined in the immediate years after the end of the war indicates that, as the aggregate enrollment levels during this time period also suggest, females were less likely to pursue higher education in the postwar years than they were during the war. In conjunction with the anecdotal historical evidence presented earlier, it seems reasonable to suggest that at least some of the decline in respondents'd enrollment levels was due to the overwhelming number of veterans, subsidized by the G.I. Bill, that were flooding college campuses at the time. In particular, those respondents from birth-year cohorts 1928-1930 – those that align with the expected enrollment years 1946 – 1948 - appear to have been the most affected by this phenomenon. The fact that these years correspond with the highest levels of veteran enrollment in higher education may be not be a simple coincidence.

However, correlation does not suggest causation, and other factors besides the infusion of hundreds of thousands of G.I.'s into the nation's higher education system may be motivating the nature of these trends instead. For instance, the fact that these birth-cohort years were born immediately preceding the Great Depression may have negatively effected their abilities to pursue higher education – these respondent's most formative years for childhood development were during the depression, and such deprived times might have resulted in inferior outcomes in secondary school attainment or parental investment in their well-being. These factors obviously compounded the difficulty of enrolling in an institution of higher education during this era.

Similarly, a respondent's decision to enroll in a college or university is also function of concurrent options that might be offered to a prospective student. If marriage or entering the workforce becomes relatively more lucrative to a female at the time she must make a decision regarding college enrollment, she will be more likely to not pursue a higher education. In this light, the decline in female's collegiate enrollment rates at the end of World War II may simply be a reflection of changing priorities among young woman at the time. As previously discussed, there were profound changes in the social and economic context of American life during the immediate postwar era. Marriage and birth rates increased dramatically after victory was declared in Japan. As a result, by 1946 the labor force participation of women in the 20-34 age group was one million women below what would have been expected under pre-war trends (Hartmann, 1985, 91). These transformations in the social and economic experiences of women during this time must be taken into consideration when assessing the ability of females to pursue higher education.

Therefore, in order to obtain a greater understanding of the effect that various factors had on a female's ability to enroll in college during this time frame, it is necessary to control for an array of demographic and social factors that could have affected these outcomes. Only after controlling for these other factors might it be possible to conclude that, after all other things are held equal, a female born in one particular birth-year cohort is more or less likely to enroll in an institution of higher education than her peers in other birth-year cohorts.

NLSMW Microdata and the Factors Affecting Female Enrollment Rates

One way to model the higher educational outcomes of individual females during this 15 year period is to utilize binary logistic regression analysis. By coding the variable of interest -

whether or not a respondent ever enrolled in an institution of higher education ($ENROLL_i$) - into a binary response variable, a regression utilizing a maximum-likelihood estimator is able to estimate the relative impact that an array of various factors have on the likelihood of enrolling in college for the females in the NLSMW. In this way, other demographic or social effects may be partialled out and the true effect that an individual's birth-year cohort has on her propensity to enroll in college may be discerned.

A logistic regression model that helps to predict an individual respondent, *i's* higher educational outcomes could take the following form:

$$(1)\quad ENROLL_i = \alpha + X_i\beta + Z_i\lambda + Y_i\gamma + \varepsilon_i$$

where X_i, Z_i, Y_i are arrays of explanatory variables for the independent variable, $ENROLL_i$. In particular, X_i is an array of demographic, educational, and social explanatory variables, Z_i is an array of variables pertaining to the geographic location of a respondent at the time she would have been most likely to enroll in college, and Y_i is an array of the primary variables of interest in this analysis – the birth-year cohort an individual respondent was born into. Meanwhile, α is a baseline constant, β is an array of estimated regression coefficients for the demographic variables, and λ and γ are the regression coefficients for the geographic and time variable arrays, respectively.

A logistic regression consistently (approximate the true population parameter) and efficiently (produce asymptotic t-values provided that the sample size is large enough) estimates the true population-specific relationships that exist between either categorical or continuous explanatory variables and a binary independent variable. Moreover, unlike a linear probability regression model using ordinary least squares (OLS) where the results are not necessarily

constrained between 0 and 1, a logistic regression using a maximum-likelihood estimator is able to successfully limit the predicted outcomes to between the necessary parameters. A maximum-likelihood estimators (MLE) seeks to maximize the log likelihood (LL), which reflects how likely it is (the odds) that the observed values of the dependent variable (*ENROLL*) may be predicted from the observed values of the independent variables (in variable arrays *X, Y, Z).*

The NLSMW survey asks the respondents an abundance of questions of that allow for the creation of robust demographic, educational, and social explanatory variables for the purposes of this study. Of particular importance to this study, and included in X_p is the social and economic background of a respondent's parents, the family situation that a respondent experienced when they were growing up, the race of a respondent, and the educational aptitudes possessed by a respondent when they were in high school.

One of the key demographic variables of interest in assessing a respondent's propensity to go on to higher education is her socioeconomic background when she was growing up. Individuals from high socioeconomic backgrounds are much more likely to pursue a higher education, not only because their parents are already more likely to be highly educated, but also because their families possess the resources to send their children to college. Even though self-support was becoming increasingly popular for students during this era, the vast majority of students who attended college did so with the financial assistance of their parents. This is particularly true for females during this time; for many families of lower socioeconomic status, sending a child off to college was a luxury that could only be afforded to the male children.

The 1967 NLSMW survey asked respondents an array of questions pertaining to their background when they were 15 years of age. These questions included topics regarding the level of education of a respondent's parents, and the occupation of the respondent's head of household. The occupation of a respondent's head of household was recorded as a three-digit

Census occupational category and then converted by the survey into a score known as the Duncan index. The Duncan index is a proprietary scale used by social science researchers to easily classify the socioeconomic status of different occupations. Under the Duncan index, all three-digit 1960 Census occupational categories have been assigned a two-digit ordinal prestige score based upon the education and income distributions of an individual's occupation. Therefore, Duncan scores, ranging from 0 to 97, may be interpreted either as estimates of prestige ratings or simply as values on a scale of occupational socioeconomic status. Duncan scores were also calculated for the respondent's mother when the respondent was 15, as well as for the respondent and her husband (if applicable) in 1967.

Duncan scores are used as a proxy for the socioeconomic background of a respondent in the logistic regression employed in this analysis. Because Duncan scores also take into account the educational backgrounds required for certain jobs (and thus equate certain low-paying, high-education jobs with high-paying, low-education jobs on the ordinal scale of prestige) there is no need to include an additional variable pertaining to the educational background of a respondent's parents.

Table 2A presents some examples of certain Duncan scores and certain occupations that they may be associated with. As seen, some occupations, like teacher, are associated with far higher Duncan scores than other occupations with a similar pay-scale, like craftsman. This is due to the additional prestige associated with the extra education required to become a teacher. Meanwhile, Table 2B presents the distribution of Duncan scores for four different classifications of people that each respondent was asked about in the in 1967 survey – the respondent (R), the respondent's husband (R – Husband), the respondent's head of household when the respondent was 15 years of age (HH R 15) and the respondent's mother when the respondent was 15 years of age (M R 15). Weighted by the survey-provided population weights, the 10^{th}, 25^{th}, 50^{th}, 75^{th},

and 90th percentiles are listed for each type of person. In the case that one of these people was not employed or does not exist (i.e. the respondent does not have a husband), they are simply omitted from the calculation of the percentile ranks. As can be discerned, there is a sizeable increase in the median Duncan scores across generations from the table - between the respondent (or her husband) and the respondent's parents the median Duncan score increased by more than 22 points. Moreover, of the females that were occupied at the time of the survey, the median respondent had a higher Duncan score than the median score of the her husband (a statistic which includes those respondents who did not work), demonstrating that females who had a college education or a more prestigious, well-paying job were more likely to work than their counterparts farther down in the socioeconomic spectrum. Finally, Table 2C breaks down the Duncan score for each of these four "people" by the amount of college education that a female respondent had in 1967. What is so striking in this table is not only how strongly a respondent's own educational experiences corresponds to their Duncan scores, but also to that of their husbands and parents.

Figure 8 presents a visual representation of the distribution of Duncan scores of a respondent's head of household when the respondent was 15 (*HHOCC*). As seen, the vast majority of respondents' heads of household held occupations with a Duncan score below 20, but a fair amount had Duncan scores in the 40 to 60 range, and a lot are also educators – corresponding with a Duncan score of 68. *HHOCC* is the primary variable used in the logistic regression to control for the socioeconomic background of a respondent. An indicator variable for whether or not a respondent listed what her head of household occupation was when she was 15 is also included in the regression.

Educational achievement in high school is also a good predictor of one's propensity to pursue collegiate studies. Only those adequately prepared during their high school careers are

academically suited to go on to a college or university, and as such, differences in educational aptitudes in high school are able to affect the ability to go on to collegiate studies. The earliest a question pertaining to educational achievement in high school was asked of respondents was in 1972, when survey participants were asked about their performance in the English curriculum during their time in high school. The 4,369 respondents surveyed were asked to rank their performance on a five-point scale, incorporating the following categories: excellent, above average, average, below average, and poor. Another categorical response in this survey question identifies the 454 respondents that did not attend high school.

Table 2A - Duncan Index and Occupations

Duncan Index Classifications

Occupation	Avg. DI
Professional and Technical Workers	75
Educator/Teacher	68
Managers, Officers	57
Sales Workers	49
Clerical Workers	45
Craftsmen	31
Operatives and Kindred Workers	18
Service Workers	17
Farmers	14
Farm Laborers and Foremen	9
Private-household workers	8
General Laborers	7
All Occupations	30

(Duncan and Reis, 1961, 155)

Table 2B - Duncan Index Distribution

Duncan Index Distribution	R - 1967	R's Husband 1967	HH R 15	M R 15
p10	12	14	4	7
p25	17	18	14	8
p50	44	40	18	18
p75	62	77	68	61
p90	62	77	68	61
mean	37.87	41.25	26.91	26.18

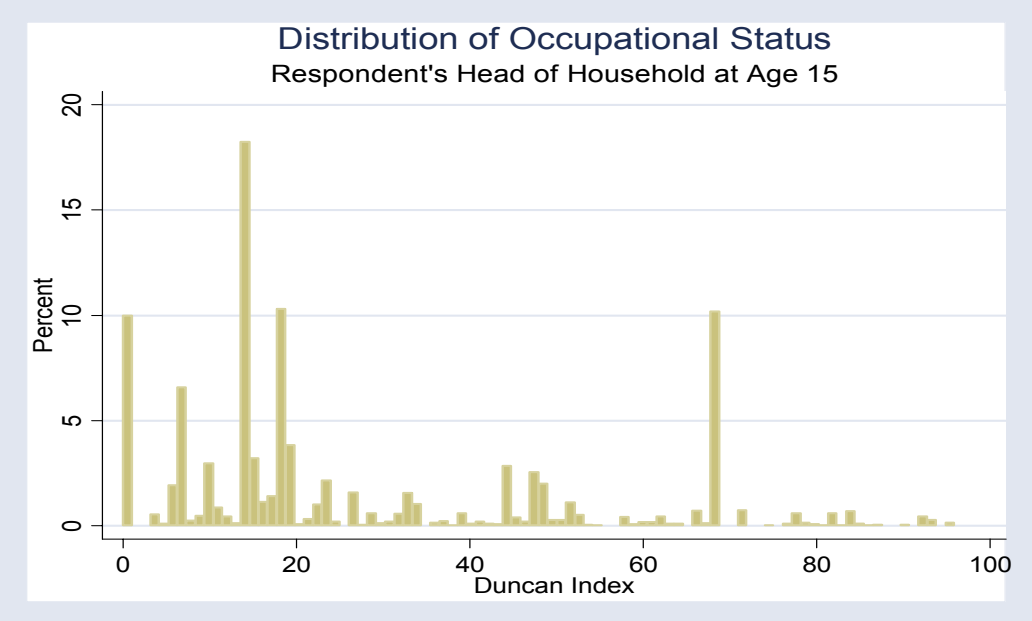
Weighted using Census population weights.

Table 2C
Duncan Index Means By Amount of College of the R

Amount of College	HH R 15	M R 15	R - 67	R's Husband 67	N
No College	23.33	22.81	33.37	37.07	4,169
Some College	35.70	34.32	50.46	53.33	420
Two Years	40.44	38.60	51.05	55.79	183
Four Or More Years	47.97	47.62	63.37	62.73	311

Weighted using Census population weights.

Figure 8



Likewise, in 1981, respondents to that year's NLSMW survey were asked a question pertaining to their performance in high school math classes, and were again asked to rank their performance on the same five-point scale. However, the slow attrition of the NLSMW over time means that only 2,741 respondents answered this question.

The information from both of these questions has been coded into two binary response variables – whether or not a respondent considered herself to be "good" in each respective

subject in high school (*GOOD ENGLISH, GOOD MATH).* In order to be considered "good" in a certain subject a respondent must have answered either "above average" or "excellent" to the question in regards to either subject. Unfortunately, no objective way to measure aptitudes and achievements in high school is present in this survey (i.e. student's test scores are not known) so these somewhat subjective parameters must be utilized instead.

Moreover, some self-bias may exist in these variables as well due to the fact that respondents are asked to assess their educational aptitudes; individuals who have attended college are probably more likely to falsely remember that they performed at an above average or excellent level in high school. Similarly, individuals who did not pursue a higher education are probably more likely to perceive that they did not do as well in high school as they actually did. In the case of non-reporting respondents to these questions, dummy variables indicating a non-response are included in the logistic regression. Among respondents who answered both questions during the respective survey years, there is a surprisingly small amount of correlation between these data – only 33.51 percent of respondent's who replied that they considered their coursework in English to be "above average" or "excellent" classified themselves in the same fashion for their math classes.

Because the inclusion of a dummy variable indicating whether or not a respondent graduated from high school would predict whether or not they enrolled in college perfectly, as no non-graduate of high school continued on for a higher education, a variable pertaining to high school graduate status is necessarily excluded from the analysis. Thus, the only educational explanatory variables used in predicting college enrollment are the respondent's own assessment of their English and mathematical abilities during secondary school. All other things being held equal, respondents who reported to have performed at high levels in math and English are

expected to have a greater likelihood of enrolling in college, as satisfactory academic preparation is one of the prerequisites of collegiate attendance.

Also of interest is the family situation that a respondent grew up in. A respondent that grew up in a two-parent household would be more likely to have more resources made available to them to pursue a higher education than a respondent who grew up in a one-parent household, a mixed family (with step-parents), or some other sort of living arrangement (foster care, living with relatives, etc.). The 1967 NLSMW asks respondents what their living situation at home was like when they were 15, and four indicator variables have been fashioned out of respondent's answer to this question; *TWO PARENT FAMILY, STEP-FAMILY, ONE FAMILY,* and *OTHER FAMILY*, indicating the four previously discussed types of familial relationships a respondent could grow up in, respectively. In the regression, *TWO PARENT FAMILY* is utilized as the baseline category for comparison purposes, and is omitted from the array of explanatory variables as a result. All other things held equal, respondents from a family type other than a two-parent family would be expected to be less likely to go to college, as familial financial resources are more likely to be tighter.

Finally, included in the X_i variable array are variables pertaining to race. Like most social and economic surveys, the 1967 NLSMW possesses a question about the respondent's race. Respondents were asked to label themselves as white, black, or "other" – for individuals of a mixed race or of another racial background (Pacific Islander, Asian, Native American). Race is an important predictor of educational outcomes during this time, as a lot of institutionalized racism still existed across the country, particularly in the college admissions process; as many institutions of higher education had quotas on the number of black students they would admit, or barred them from attending completely. Moreover, due to the segregated and unequal nature of the nation's grammar and secondary school systems at the time, even if a black female was

able to enroll in college without any institutional impediments, she still would have been placed at a disadvantage due to the lower quality of education that she most likely received growing up. As such, two indicator variables of race – *BLACK* and *OTHER* – are included in X_i, and white is the baseline race to be used for purposes of comparison.

Z_i is an array of variables that pertain to an individual's geographic location at the time that they make the decision to enroll in college. In particular, two aspects of geographic location may play an important part in an individual's propensity to pursue higher education. First, the regional area of the United States that the respondent grew up in may affect college enrollment rates, as differential opportunities in higher education may exist on a regional basis (e.g. the Northeast, having fewer publicly funded institutions of higher education during this time, may be a relatively more difficult region for resident females to obtain a higher education in). Secondly, differential opportunities for higher education may also exist in the residential location that a respondent grew up in. For instance, due to differences in schooling quality or the attitudes that a community may possess towards higher education, individuals who grew up in the suburb of a large city may have a higher propensity to go on to college than individuals who spent their adolescence in a small town.

The 1967 NLSMW survey asked respondents two questions of interest to this study pertaining to geography. The first question asked respondents their type of residential location when they were 15 years old. Respondents could answer that they resided in one of six different location types; on a farm or a ranch, in the countryside but not on a farm or a ranch, in a town (with a population no larger than 25,000), in a suburb of a large city, in a small city (larger than 25,000 residents but smaller than 100,000) or in a large city (greater than 100,000 residents). All respondents in the survey answered this question, and their responses have been coded into five different indicator variables, *FARM, RURAL, SUBURB*, *SMALL CITY,* and *LARGE CITY*,

with *TOWN* being the omitted category for purposes of having a baseline comparison category in the regression model. All other factors held constant, it is not known what residential location type is more likely to result in a female being more likely to attend college. On one hand, living in a city may provide a female with more educational opportunities, but such an individual may also be more likely to have to work to help provide for her family. In comparison, a female who grew up on a farm or a ranch may be encouraged to go to college "to see the world" or to become a schoolteacher for her rural community.

The second question that provides this study with insight into the geographic location of the respondent is a question from the 1972 NLSMW survey that asked the respondent to name the state that the last high school she attended was in. Based upon this information, an inference may be made for what geographic region a respondent was located in when she was most likely to attend college. While there is some possibility for error in this process, as a respondent may have moved between geographic regions during the time she last attended high school and the time she would have potentially enrolled in college, the problem is not perceived to be as large of a problem as it would be during more contemporary time periods when geographic mobility is more of a norm. Some 508 respondents were not interviewed in 1972, and as such, an indicator variable for a non-reporting individual, *REP GEO* is included in the logistic regression. Depending on the state, the respondent falls into one of four broad Census defined regions; *NORTH, SOUTH, MIDWEST,* and *WEST.*[11] For the purposes of the regression analysis, *NORTH* is the omitted variable to provide a baseline trend for comparison between the different regions. It is expected that some regional variation in the propensity to enroll in college

[11] States that the Census classifies as "Northern" include ME, NH, VT, MA, CT, RI, NY, PA, and NJ. Central states include OH, IN, IL, MI, WI, MN, IA, MO, ND, SD, NE, KS. Meanwhile, DE, MD, DC, VA, WV, NC, SC, GA, KY, TN, AL, MS, AR, LA, OK, and TX are states listed as being located in the South. Finally, western states comprise MT, ID, WY, CO, NM, AZ, UT, NV, WA, OR, CA, AK, and HI.

during this era will exist, as states and regions often embraced very different educational policies, and opportunities might have been more limited in certain regions.

Finally, Y_i, is the array of variables that are of the most importance in this study – the birth-year cohorts that female respondents were born into. In order to discern differential propensities to enroll in college by year – especially during and after World War II – some sort of time variables are necessary. And as discussed in the previous section, due to the fact that most students who enroll in college do so 18 years after they are born, birth-year cohorts are able to easily and effectively establish the year that a respondent would have been most likely to enroll in college. Therefore, if differences in the propensities to enroll in college exist based upon birth-year cohorts, this is strong evidence that year-specific differences existed in the ability to enroll in college during this era.

Birth-year cohort categories are included in the Y_i array for all 15 cohorts from the NLSMW data for which a large sample size exists – 1922 through 1937. This corresponds with enrollment years 1940 through 1955. Enrollment year 1940 is used as the baseline trend in the context of the regression, and as such, 1922 is the omitted birth year cohort variable. For all other birth-year cohorts an indicator variable, *ENROLLxx*, is created where *xx* is the last two digits of the expected year of first enrollment, if the female even enrolls in college at all. In this way, after controlling for all other demographic, educational, racial, geographic, and residential effects in variable arrays X_i and Z_i, the year-specific changes in the propensity to enroll in college as reflected in the parameters estimated for Y_i, may be discerned within the scope of the logistic regression analysis.

One thing that is discussed in the previous section but has yet to be controlled for in this model is the role that the individual respondent's preferences may play in her decision to enroll in college. If, on average, females' preferences for higher education did not change during the

course of this era, then there is no reason to worry about such phenomena within the framework of the regression model, as it would be simply normalized away in the error term. However, if the desire to go to college fluctuates over time across the respondents in the survey, changes in the propensity to go on to higher education between birth-year cohorts might not necessarily reflect that more or fewer females were able to go to college during certain times. Rather, differing propensities to enroll in college by birth-year cohort may simply reflect the fact that females' inclination to attend college varied during this era due to transitioning attitudes about education, work, and family.

Therefore, of particular concern in this study is that rapid and profound shifts did occur within the social and economic context of American life for females around the nation. Specifically, the wartime experience propelled women to become more engaged on the "home front" – and as a result, more women were in the labor force and pursuing higher education than ever before by the end of the war. However, with the end of the war and the impending peacetime prosperity, females found their role shifting back to domesticity just as quickly as they had found themselves catapulted into the wartime efforts a few years earlier. As previously mentioned, by 1946 over one million women no longer found themselves in the labor force (Hartman, 1985, 91). The drastic changes that occurred within American society during this time must be controlled for if it is to be asserted that females were limited in their higher educational opportunities during the postwar era – and not just that fewer females sought higher education during this time.

One method to proxy the social changes that occurred during this time would be to include a variable array M_i that contains two variables that relate to a female's marriage history. Marriage is a good indicator to use in this scenario, as changes in marriage trends tend to reflect larger changes that occur within society. In particular, whether or not a female ever married and

what age at which they were first married can illuminate shifting priorities and preferences that females had towards schooling, work, and marriage during this time. All other things held equal, a female who is married earlier in her life would be expected to be less likely to enroll in college due to the fact that she had committed herself to a marital arrangement. During this time, married women were largely expected to retain a domestic life style and begin child rearing. By marrying at an earlier age, females would be foregoing the opportunity to enroll in a college or university.

The 1967 NLSMW asked survey participants to name the month and year in which they were first married. Using this information in conjunction with the month and year of an individual's birth, the age at which an individual first became married is calculated. If a person had not been married by 1967 then they are assumed to have never married for the purposes of this study. Two variables, *MARRY AGE* and *EVER MARRY*, are thus obtained out of this question and are included in variable array M_i. The logistic regression equation is now as follows:

$$(2)\quad ENROLL_i = \alpha + X_i\beta + M_i\delta + Z_i\lambda + Y_i\gamma + \varepsilon_i$$

where δ is the estimated population parameters for the relationship that exists between M_i and $ENROLL_i$ after controlling for all other factors.

A breakdown of college enrollment rates by birth-year cohort and age of marriage is found in Table 3. Unsurprisingly, as the age of marriage of a female increases, the likelihood that she enrolled in an institution of higher education increases as well. For those females that married before the 18, no birth-year cohort ever realized more than a ten percent enrollment in higher education. Meanwhile, for those females who married later than the age of 24, more than 25 percent of all individuals were enrolled in an institution of higher education for at least one

year. Variations in any particular birth-year cohort's likelihood to enroll in higher education are also seen in Table 3. In particular, for those females married between the ages of 20 and 24, birth-year cohorts born in 1929 and 1930 – corresponding with expected enrollment years 1947 and 1948 – are much less likely to have enrolled in a college or university when compared to their surrounding birth-year cohorts.

Table 3, Enrollment Rates By Year of Birth and Age of Marriage

Year of Birth	Expected Enrollment Year	Age of Marriage			
		<18	**18 - 20**	**20-24**	**>24**
1922	1940	0.00% 41	9.54% 60	14.43% 76	27.59% 79
1923	1941	3.16% 68	11.12% 85	15.23% 130	24.45% 114
1924	1942	7.31% 66	12.52% 73	23.95% 128	27.57% 101
1925	1943	1.70% 82	1.45% 71	24.17% 134	23.25% 101
1926	1944	7.06% 44	10.50% 72	20.06% 132	32.11% 86
1927	1945	3.46% 53	15.77% 85	33.73% 125	33.19% 91
1928	1946	2.66% 59	15.10% 98	39.34% 115	24.85% 75
1929	1947	3.14% 77	15.08% 90	18.75% 109	34.27% 82
1930	1948	5.01% 55	13.39% 66	26.16% 104	33.35% 84
1931	1949	1.22% 60	15.33% 80	32.71% 77	36.45% 72
1932	1950	0.00% 64	18.97% 82	31.39% 87	28.92% 70
1933	1951	8.10% 80	10.42% 69	26.61% 102	49.51% 56
1934	1952	2.06% 68	11.37% 87	29.47% 105	29.70% 62
1935	1953	4.75% 76	12.63% 83	36.62% 112	37.43% 69
1936	1954	4.01% 65	9.70% 88	34.47% 107	26.80% 68
1937	1955	0.00% 14	26.86% 13	40.11% 27	26.44% 12

Number of women in the survey that fall into each given category by birth-year cohort is found below the percentage of women who enrolled in an instituion of higher education.

Similarly, for those females that were married after the age of 24, the birth-year cohort born in 1928 – corresponding with expected enrollment year 1946 – the college enrollment level is also markedly lower than the other surrounding birth-year cohorts.

Taken together, these descriptive statistics suggests that females born in the birth-year cohorts that were expected to enroll in college immediately at the end of World War II were less likely to enroll in college than their peers in other birth-year cohorts. This fact is especially true even for those women who didn't marry until after the age of 24 – women who married this late into their twenties were typically the type expected to attended a college or university. The observation that even those women who were most likely to attend college – those women who were married after the population-weighted mean marriage age of 20.5 in the NLSMW dataset – were less likely to attend college in the immediate postwar period suggests that some other factor besides a woman's own decision to marry and/or enroll in college may have suppressed female enrollment rates during this time. However, in order to truly make any assertions of this type, age of marriage must be controlled for with arrays of all other possible variables that could affect a female's propensity to go on to higher education.

Yet, the inclusion of the marriage array M_i in this logistic regression is somewhat problematic due to the fact the decision to marry is often correlated with the decision to pursue a collegiate education. In particular, the decision to marry and the decision to enroll in college is a simultaneous selection problem; the decision to marry or enroll in college affects one's decision to do or not do the other. As Goldin (1994, 31) discusses, college enrollment imposes a "treatment effect" upon an individual female that effectively motivates her to marry at a later age, as a "college education permits women to be more discerning in their choice of lifestyle and husband." Similarly, a female who marries early on in her life has less independence in the decisions that she can make about her education and possible career. By marrying at an earlier

age, a female would be explicitly limiting her future educational opportunities, and thus causing an endogenaity problem within the specifications of the logistic regression model. While all other variables are exogenous to the decision to go to college, the decision to attend college is intimately related to one's age of marriage.

At the very least, however, the inclusion of variables pertaining to marriage within the regression model allows the marriage array to act as a controlling agent when making comparisons between birth-year cohorts. If, after controlling for the age in which a female married, differential propensities to enroll in higher education still exist based on the birth-year cohort into which a respondent is born, then this suggests that even after controlling for the changing social dynamic that existed at the end of the war, females were less likely to enroll in an institution of higher education. Put another way, if somebody who did not marry until the age of 22 was less likely to enroll in college after the war than somebody with the same exact background during the war, then this is evidence that, at least to some extent, women who sought a higher education after the war experienced more difficulty in actually trying to enroll in college.

Therefore, to heed any concerns that the variable array pertaining to marriage is causing the logistic regression's parameter estimates to be biased due to the simultaneous selection problem, two logistic regression model specifications are used. If *MARRY AGE* is less influential on the estimated regression parameters than otherwise suspected, and age of marriage does not pose the endogenous variable/simultaneous selection problem that is of concern here, then the estimates for the remaining variables should be consistent across model specifications 1 and 2.[12]

[12] Theoretically, one can "instrument" an endogenous explanatory variable with a proxy variable that is correlated with the explanatory variable of interest but is uncorrelated with the response variable. However, as no variables in the NLSMW that may be uncorrelated with marriage age (number of children, average income

A common question in regards to the use of the NLSMW data is whether or not one should use the provided population weights when performing regression analysis. The reference manual for these data suggests that, in short, regression models should not be weighted; as such a course of action may lead to incorrect estimates. If it is believed that particular groups follow significantly different regression specifications, the preferred method of analysis is to estimate a separate regression for each group or to use dummy (or indicator) variables to specify group membership. As such, because a sizable proportion (ten percent) of blacks in this sample attended college, and the determinants of college enrollment are not thought to significantly differ between whites and non-whites, in the logistic regression models utilized in this analysis all of the factors motivating the needs for population weights (racial, geographic, residential location) are controlled for in the employment of indicator variables for each of categorical specifications. Separate regression equations for whites and non-whites are not run (NLS of Mature Women User's Guide, 2001, 26).

Table 4 presents the un-weighted means and standard deviations of the variables used in the regression. These numbers help to grasp the scale of each variable. In general, the distribution of variables is as expected: 18 percent of all respondents enrolled in college; the mean Duncan score for a respondent's head of household when she was 15 is 24; of the 94 percent of females that ever married, the mean age of marriage was 19.4, roughly 30 and 20 percent of respondents felt that their performance in English and math courses, respectively, was above average. Some 70 percent of all respondents lived in two-parent homes at the age of 15, and another 70 percent of all respondents in the survey were white. Moreover, a roughly equivalent number of respondents come from each of the 15 birth-year cohorts, 1922 – 1937, corresponding with enrollment years 1940 – 1955 that are used in this study. And while it may

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of husband, etc.) are uncorrelated with the decision to enroll in college, an instrumental variable regression is unable to be implemented.

Table 4, Descriptive Statistics of Variables

	Mean	Stan. Dev
COLLEGE ENROLL	0.180	(0.38)
HHOCC	24.093	(22.22)
REP HHOCC	0.103	(0.30)
MARRIAGE AGE	19.054	(6.86)
EVERMARRY	0.941	(0.24)
GOOD ENGLISH	0.329	(0.47)
REP ENGLISH	0.140	(0.35)
GOOD MATH	0.224	(0.42)
REP MATH	0.460	(0.50)
TWO PARENT	0.713	(0.45)
STEP-FAMILY	0.044	(0.21)
ONE PARENT	0.154	(0.36)
OTHER FAMILY	0.089	(0.28)
WHITE	0.710	(0.45)
BLACK	0.272	(0.45)
OTHER	0.017	(0.13)
FARM	0.253	(0.43)
RURAL	0.067	(0.25)
SUBURB	0.041	(0.20)
SMALLCITY	0.135	(0.34)
LARGE CITY	0.207	(0.41)
TOWN	0.297	(0.46)
NORTH	0.276	(0.45)
SOUTH	0.149	(0.36)
MIDWEST	0.303	(0.46)
WEST	0.039	(0.19)
REP GEO	0.233	(0.42)
ENROLL40	0.051	(0.22)
ENROLL41	0.078	(0.27)
ENROLL42	0.073	(0.26)
ENROLL43	0.077	(0.27)
ENROLL44	0.066	(0.25)
ENROLL45	0.070	(0.25)
ENROLL46	0.068	(0.25)
ENROLL47	0.071	(0.26)
ENROLL48	0.061	(0.24)
ENROLL49	0.057	(0.23)
ENROLL50	0.060	(0.24)
ENROLL51	0.061	(0.24)
ENROLL52	0.064	(0.24)
ENROLL53	0.067	(0.25)
ENROLL54	0.065	(0.25)
ENROLL55	0.013	(0.11)
n	5066	

appear that a disproportionately small number of respondents hail from the Western states, it should be remembered that during the time these respondents were born, 1920 – 1935, the West

had yet to experience the intense explosion in growth that it would experience during the post World War II eras. Moreover, this might be partially explained by the explicit over-sampling of blacks, who were disproportionately located in the South, Midwest, and North during this time.

In all, 5,066 women are included in this analysis; the remaining 17 observations from the original 5083 observations are dropped because they represent individuals born in years during which so few other respondents were born that statistical inference on their experiences would have been virtually impossible due to the small sample size.

[Table 5 here.]

Table 5 displays the maximum-likelihood estimator logistic regression results. For ease of understanding, the odds ratios of variables are displayed in lieu of the variable coefficients, and the z-scores of each variable are displayed instead of the asymptotic standard errors of the variable coefficients. Odds ratios are easy to interpret because they represent the expected change in the odds of the dependent variable (*ENROLL)* occurring with a change the independent variable; in the case of a continuous explanatory variable (*HHOCC*, *MARRY AGE*), the odds-ratio is the expected change in the dependent variable with a one unit change in the explanatory variable; in the case of an indicator variable, the odds-ratio for any given variable is the expected change in the odds of enrolling with a change in the category in which an individual falls. In general, these partial odds-ratios are communicative - they may be multiplied to each other to predict the odds of any particular type of individual enrolling in college depending on their own personal characteristics as reflected in the array of variable specifications.

Table 5
Binary Logistic Regressions on College Enrollment
Odds Ratios (Z Scores)

Explanatory Variable	W/ Marriage Age		W/O Marriage Age	
HHOCC	**1.028**	**(14.22)**	**1.029**	**(15.01)**
REP HHOCC	**2.286**	**(4.77)**	**2.361**	**(5.06)**
MARRIAGE AGE	**1.115**	**(10.43)**	.	.
NEVER MARRY	**22.836**	**(11.40)**	.	.
GOOD ENGLISH	**3.179**	**(12.16)**	**3.269**	**(12.66)**
REP ENGLISH	**2.747**	**(6.25)**	**2.832**	**(6.58)**
GOOD MATH	**1.620**	**(4.56)**	**1.584**	**(4.41)**
REP MATH	**0.764**	**(-2.37)**	**0.740**	**(-2.69)**
STEP-FAMILY	**0.582**	**(-2.31)**	**0.483**	**(-3.13)**
ONE PARENT	**0.686**	**(-2.79)**	**0.668**	**(-3.06)**
OTHER FAMILY	0.723	(-1.71)	**0.634**	**(-2.46)**
BLACK	0.853	(-1.38)	0.905	(-0.90)
OTHER	1.253	(0.70)	1.433	(1.13)
FARM	**1.392**	**(2.69)**	**1.352**	**(2.50)**
RURAL	**0.682**	**(-1.87)**	**0.657**	**(-2.09)**
SUBURB	0.925	(-0.38)	1.015	(0.08)
SMALLCITY	**1.163**	**(1.17)**	**1.191**	**(1.38)**
LARGE CITY	0.941	(-0.52)	1.020	(0.17)
SOUTH	**1.323**	**(2.23)**	**1.340**	**(2.36)**
MIDWEST	0.970	(-0.29)	0.969	(-0.30)
WEST	0.936	(-0.27)	0.880	(-0.54)
REP GEO	**0.666**	**(-2.58)**	**0.705**	**-2.27**
ENROLL41	1.298	(0.99)	1.291	(1.00)
ENROLL42	1.626	(1.86)	1.556	(1.74)
ENROLL43	1.294	(0.97)	1.168	(0.60)
ENROLL44	**1.681**	**(1.98)**	1.546	(1.69)
ENROLL45	**2.260**	**(3.19)**	**2.026**	**(2.83)**
ENROLL46	**2.082**	**(2.82)**	**1.855**	**(2.44)**
ENROLL47	1.437	(1.37)	1.285	(0.97)
ENROLL48	**1.989**	**(2.60)**	**1.870**	**(2.43)**
ENROLL49	1.623	(1.81)	1.463	(1.45)
ENROLL50	**1.691**	**(1.96)**	1.521	(1.61)
ENROLL51	**1.756**	**(2.12)**	1.463	(1.47)
ENROLL52	1.470	(1.43)	1.262	(0.89)
ENROLL53	**2.082**	**(2.84)**	**1.763**	**(2.25)**
ENROLL54	1.565	(1.69)	1.360	(1.19)
ENROLL55	**2.275**	**(2.11)**	1.800	(1.52)
psuedo-R^2	0.203		0.173	
n	5066		5066	

To find the new odds of the dependent, the original odds of the dependent variable is multiplied by the product of the odds ratios for the corresponding subject of interest. As odds-ratios are displayed, and not the estimated variable coefficients, the intercept of the estimated logistic regression equation is not needed as it is calculated into the presented odds-ratios. Moreover, an odds ratio may be converted into the probability of a certain event occurring by multiplying the baseline odds of enrollment by the estimated odds ratio for the certain event, and then using the following formula:

$$(3)\quad P(ENROLL_i \mid u_j) = \frac{oddsratio(ENROLL_i)oddsratio(u_j)}{1 + oddsratio(ENROLL_i)oddsratio(u_j)}$$

where u_j is any variable and its associated value j for individual I, and the baseline probability of enrolling in college is 0.178, corresponding to an odds ratio of 0.220.

Meanwhile, asymptotic standard errors represent the smallest possible value for the standard error of the estimated variable coefficient when the data fit the model. Z-scores are obtained by dividing the estimated variable coefficient by the asymptotic standard error and represent the number of standard deviations away from a one-to-one odds ratio a variable coefficient represents. For an estimated odds-ratio with an absolute value of its z-score greater than 1.96, then the odds-ratio is significant different than one (that is, the odds of something happening being perfectly even). If an odds-ratio is statistically significantly greater than one, then a one-unit increase in the variable results in an increased probability of enrolling in college. Meanwhile if the odds-ratio is less than one at a statistically significant level, then the probability of enrolling in college given a unit increase in the variable (or change in the indicator variable) is diminished.

Regression Results

Both logistic regression model specifications are displayed in Table 5. In general, the estimates for the variables are consistent across the models; even though age of marriage is a statistically significant predictor of whether or not a respondent attended college, the inclusion of *M* does not appear to bias the regression estimates vis-à-vis the model without *MARRY AGE* or *NEVER MARRY*. This suggests that the decision to marry and the decision to go to college is less of a simultaneous selection problem than previously thought; perhaps some females decide to put off marriage until later in their life independent of their decision to attend a college or university and instead choose among an array of options after deciding to put off marriage – including working, attending college, helping out around their home, or traveling.

Psuedo-R^2 statistics are presented for both logistic regression model specifications. While for an ordinary least squares regression a typical R^2 statistic explains the amount of variance in the continuous response variable that is explained by the regression, no direct analogue exists in a logistic regression due to the fact that the variance of a binary response variable depends on the frequency distribution of the variable, and therefore, the variation cannot be compared directly. Therefore, the pseudo-R^2 statistic attempts to provide an analogue to the traditional R^2 with a squared contingency coefficient. It can be interpreted much as a traditional R^2 is, although the maximum value is not one. For micro-level data attempting to model behavioral decisions, both specifications explain a respectable amount of variance in the response variable according to the psuedo-R^2 - with 20.3 and 17.3 percent of the variation able to be explained in the models with and without the marriage variables, respectively.

Age of marriage and whether or not a respondent ever married are unsurprisingly statistically significant predictors of whether or not an individual would ever enroll in college. In general, a one-year increase in the age of marriage increases the likelihood of college attendance by an odds ratio of 1.12, or a 1.8 percent increase in the chance of going to college. Meanwhile, the five percent of the females in the sample that never married are 65 percent more likely to have enrolled in college at some point in their life.

Moreover, the estimates of the odds ratio for the array of demographic and geographic variables are in line with expectations of the presumed effects of such variables on the propensity to enroll in college. An increase in a respondent's head of household's occupational prestige when they were 15, as measured by the Duncan score, is a strong determinant of whether or not a respondent will enroll in school during this era. A one-unit increase in a respondent's head of household's Duncan index as reflected in *HHOCC* is associated with a 3 percent increase *in the odds* of attending college, or a 0.4 percent increase in the probability of attending college. Based on these estimates, a full standard deviation increase in a respondent's head of household's prestige as reflected in the Duncan score corresponds with an 8.8 percent increase in the probability of enrolling in college.

Similarly, "good" performance in the English or math curriculum during high school is also associated with a higher likelihood of college enrollment, with performance in English classes being a stronger predictor of collegiate attendance than performance in math classes. Differential propensities to enroll in college also exist across respondents from different family types, with females from one-parent families and stepfamilies less likely to attend college than females who were raised in a two-parent family; however, the difference in propensities to enroll in college between these categories is not statistically significant.

Perhaps unexpectedly, there does not appear to be a *ceteris paribus* effect of race on college enrollment rates. Although being black is associated with a lower odds ratio of attending college, this parameter is not statistically significant at a five percent level. This suggests that the lower college enrollment propensities of blacks during this time are explained entirely by other demographic variables, including socioeconomic status, academic performance in high school, and geography.

Geographic and residential locations are also determinants of a college education. In general, growing up on a farm or in a small city (pop. 25,000 – 100,000) are associated with a higher likelihood of college attendance compared to the omitted category, town (pop. less than 25,000). Meanwhile, growing up in a large city is associated with a lower likelihood of ever enrolling in college, all other things held equal. And interestingly, the South is the only region in the United States that is associated with a higher odds-ratio of college enrollment. This result is counterintuitive, as historically the South experienced less of an investment in education and higher education institutions relative to regions like the Northeast or the Midwest. Yet, perhaps females were more likely to attend higher education institutions in the South during this time. As many of the prestigious and well-established colleges and universities in the North and Midwest were being overrun by returning veterans in the immediate postwar era, these trends might have resulted in a relative boon for the higher education experiences of females in the South.

However, the main variables of interest in this study are the ones associated with the expected year of enrollment for the females in the NLSMW. If, after controlling for all other factors, differential propensities to enroll in an institution exist by expected enrollment year, as proxied by the birth-year cohort of an individual, this suggests that year-specific effects were affecting the enrollment experiences of females into higher education during this era. More specifically, if females were more likely to attend college in the later years of the war than in the

immediate years of the postwar period, even after controlling for all other possible factors that could have affected college enrollment rates – including the age at which a female married – then this would suggest that the large infusion of male veterans into the nation's system of higher education in the second half of the 1940s served, at least in part, to crowd out females from enrolling in a college or a university during this time.

By observing the point estimates of the odds-ratios of attending college for females from the various birth cohort years, trends in the likelihood of enrolling in college during this era may be discerned. In general, these point estimates follow the trends reflected in the analysis of aggregate enrollment data as well as in the direct calculations of birth-year cohort enrollment rates; towards the later years of the war, in expected enrollment years 1944, 1945, and 1946 females increasingly began to pursue a higher education at a statistically significant rate when compared to the earlier years of the war.

In fact, women born in 1927, and thus part of the cohort of women most likely to have first enrolled in college for academic year 1945-1946, were more likely than any other cohort born between 1922 and 1936 to go to college, all other things being held equal. All other things held equal, a female born in birth-year cohort 1927 is expected to have a 15.2 percent higher probability of enrolling in college than her 1922 counterpart. In the regression including the marriage variables, the only birth cohort to have a higher propensity to go to college than the cohort born in 1927 was the cohort that was born in 1937 – the one expected to first enroll in college in 1955. Likewise, for the regression omitting the marriage variables, enrollment propensities would not increase again until the birth-year cohort expected to enroll in college in 1953. Based upon these point estimates, it would take almost a decade from the end of World War II for females to fully regain their impetus into higher education that they achieved during their wartime experience.

Moreover, the one birth-year cohort in the immediate postwar period that experienced a lower propensity to enroll in an institution of higher education than those in the later years of the war was the cohort born in 1929 – the cohort corresponding with the expected enrollment year of 1947. Unlike the individuals born in the birth-year cohorts immediately preceding them, the birth-year cohort from 1929 did not experience a statistically significant difference in their propensity to enroll in college when compared to females born in earlier birth-year cohorts. This result occurs in both model specifications – both when controlling for the age of marriage and when leaving M_i out. The fact that this result corresponds with the academic year in which the largest number of veterans sought higher education is perhaps not a coincidence. Therefore, it appears that, all other things held equal, females who sought to attend college in the immediate postwar period found it more difficult to enroll in an institution of higher education during this time due, at least in part, to the infusion of male veterans - many of whom would not have been there had it not been for the higher education subsidy that the G.I. Bill provided.

While this analysis has illuminated the aggregate experiences of females across the nation, the effects that the G.I. Bill might have had on women seeking a higher education on an institution-by-institution basis are still unknown. The G.I. Bill may have only disproportionately affected females who only sought to enroll in certain types of higher education institutions. Conversely, the G.I. Bill may have prompted a renaissance in all women's colleges during the postwar period. Yet, answers to these inquiries, and others, require the development of an institutional-level data set of enrollment trends during this time period.

CHAPTER FOUR

VETERANS AND FEMALES IN NEW YORK STATE HIGHER EDUCATION INSTITUTIONS

1939-1954

CHAPTER FIVE

CONCLUSION

"A general tendency… in postwar educational planning is that of thinking only in terms of male students."

Anonymous Member of the American Association of University Women, 1940s

Looking back on the political history of the G.I. Bill, it should perhaps be no surprise that women pursuing higher education in the immediate postwar period were detrimentally affected by the 1944 legislation. After all, during the creation and framing of the G.I. Bill, policymakers possessed little or no concern towards the well being of America women during the postwar era. The political necessities that faced the country during the war left little or no room for the condition of women to be considered. The Roosevelt administration primarily concerned itself with attempting to plan for the postwar adjustment to a peacetime economy while hoping to further the system of economic security that was first implemented in it's New Deal programs. Meanwhile, the veteran's lobby led by the American Legion sought to obtain a benefit for the returning soldiers unlike any that had ever before existed – one would that actually enfranchise veterans into the postwar social and economic order.

Taken together, these considerations left little political room for legislation pertaining to the social and economic status of females during this era. The idea of creating a "Rosie the Riveter Bill," while appropriate given the extraordinary amount of effort that American females dedicated to the war effort, would never cross the minds of the nation's lawmakers. As an anonymous member of the American Association of University Women (AAUW) stated during the 1940s: "A general tendency… in postwar educational planning is that of thinking only in terms of male students" (Levine, 1995, 89).

Upon scrutinizing the political history of the G.I. Bill and understanding the educational impact that it had on woman, what is perhaps more surprising is the little concern possessed by myriad women's organizations – perhaps epitomized by the AAUW - for the possible unfavorable effects that the G.I. Bill would have had on their own constituents. This is most surprising due to the fact that the AAUW was actively engaged in myriad lobbying efforts during the war and actively involved itself in postwar planning. In particular, the AAUW sought to

demonstrate women's potential for leadership and community service. It was firmly believed by the organization that women could possess the leadership and management skills to regulate the 'home front' under Roosevelt's War Powers Act, which sought to regulate civilian life.

Moreover, Helen White, a professor of English at the University of Wisconsin, president of the American Association of University Women (AAUW), and first woman president of the American Association of University Professors (AAUP), firmly believed that women's wartime contributions during the war would catapult the status of women to a position of more prominence in the public realm after the war. Most educated, professional women echoed this sentiment during the war (Levine, 1995, 60-62).

In the years leading up to the end of the war, the *Journal of the American Association of University Women* frequently commented on planning for the postwar peace. In terms of postwar planning, the AUUW advocated in 1944 that the "The established women's organizations must raise their voices to insist that planning take women into account, that a definite program of specifics … be outlined now," further stressing that, "women should take definite action now in order to implement the significant statements of women leaders the world around, to see that women have a share in national and international planning."[13] Educated females, more active and engaged in society during the War than ever before in American history, fully realized the impending pressures they would have to fight in order to maintain their stature in the postwar era.

Yet, the AAUW received the passing of the G.I. Bill in fairly favorable terms supporting the resolution to bestow the returning veterans with ample benefits while also noting that, "the war discovered that there is a great flexibility in the historically understood rigid liberal arts

[13] "Women's Interest in Post-War Economic Plans." *Journal of the American Association of American Women*. Spring 1944 Vol. 37 No. 3, 162-164.

academic programs."[14] In this light, it appears that women who supported the higher education of females during this time were stuck between two mutually poor options: They couldn't oppose the G.I. Bill because it would be unpatriotic. Moreover, they couldn't support it because it would value the education of men over women.

If anything, perhaps the AAUW was just as surprised by the overwhelming success of the higher education components of the G.I. Bill as the rest of society was. That millions of veterans would flood college campuses in the immediate postwar era was not an anticipated consequence at all. As Alice Llyod wrote in the Association's *Journal:*

> "Of the returning veterans are flocking colleges in 1946… they have come quickly and in larger number than anyone anticipated … possessing "inevitable and unchallenged rights" that are threatening college groups on many coeducational campuses…. The group most often endangered by this trend is the group, which has never been, too secure in its rights and privileges in the educational world – the women."[15]

In all, following World War II, the veterans, by their numbers alone, were the single-most dominating group to determine national and international policies for the next 25 years. And those organizations's that were explicitly concerned with the higher educational opportunities of women had to succumb and acquiesce to the overwhelming pressure put on their efforts by the educational effect that the G.I. Bill had upon America.

Indeed, the G.I. Bill and the corresponding infusion of millions of male veterans into the nation's colleges and universities had a large effect upon the higher education of American women during the immediate postwar era. Quantitatively, evidence from Chapters Three and

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[14] Hosp, Helen M. "Forward Looking Programs in Higher Education." *Journal of the American Association of American Women*. Fall 1944 Vol. 38 No 1, 33-35.
[15] Lloyd, Alice C. "Women in the Postwar College." *Journal of the American Association of American Women*. Spring 1946 Vol. 39 No. 3, 131-135.

Four suggests that females were most limited in their higher education opportunities in academic year 1947-1948, and that females were systematically crowded out from institutions of higher education that possessed more veteran enrollments in the postwar year. Taken together, the unprecedented opportunities in higher education that were offered to females during the later years of the war were quickly dissolved by influx of veteran students in the postwar years – an influx that was greatly motivated by the G.I. Bill.

From a demand perspective, the wartime and postwar era allocation of men and women in higher education perhaps reflects an efficient allocation of students. Within the context of the pre-existing trends and social norms directed towards males and females within higher education, the experience of female students during this time may be motivated by society's desire to achieve the most desirable educational outcomes, subject to the constraints of context and policy; knowing that many males would be able to enjoy higher education opportunities after the wall due to the G.I. Bill, perhaps families saw the chance to afford their daughters a higher education during the later years of the war. This suggests an efficient intertemporal allocation of student and educational resources during the wartime and postwar experiences. During the later wartime years, when savings was ample and it was clear that the war was going to end, it would have made sense for families to invest in the higher education outcomes of females while sons were still fighting abroad. This trend is reflected in the relative rise in female enrollment propensities during the later years of the war.

Anecdotally, this conclusion is supported by some of the AAUW's own observations during the war. By 1944, the AUUW was pleasantly surprised by the wartime infusion of new female students into institutions of higher education. The organization speculated and offered various reasons as to why more females were entering college at the time. First, they observed that money that would otherwise go to sons' higher educations was going to daughters as the

sons were in the service. Secondly, the AUUW noticed that the growth in college programs offering future careers in the war industry of government service were becoming more attractive to females – demonstrating that females were in enrolling in academic programs to accommodate labor force demand. And finally, females may have been heeding their mentor's advice and enrolled in college to take advantage of previously unavailable educational opportunities and to continue their patriotic heritage. (Hosp, 1944, 107)

Yet, even if the enrollment rates during these years reflect an efficient allocation of the demand for higher education among men and women, the fact remains that women who sought higher education during the immediate postwar years were often limited in their opportunities. Direct costs are often associated with the inability to attend college; these include potential limitations on future earnings, the health and well-being of one's self and one's children, the educational outcomes of one's children, and other, non-pecuniary factors affecting an individuals quality of life.

The "marriage market" effect that exists among college attendants must also be considered. Females who attend college are more likely to marry a college-educated man than their peers who do not go to college. Marrying a college-educated man has further benefits for a woman, as she will most likely enjoy a higher standard of living and quality of life. Provided that some females were crowded out of higher education opportunities by the G.I. Bill in the postwar era, it seems safe to conclude that some of these women were unable to marry the college-educated men that they otherwise would have been wed to.

While any effect that college attendance had upon a collegiate women's ability to marry a college-educated men and reap the benefits of his higher educational and presumably, socioeconomic status, the immediate postwar period saw such an over-supply of college-educated men in the market that many non-college women felt a residual effect from the G.I.

Bill. Although the enrollment of veterans may have crowded out females from college attendance, to say that females did not benefit in any way from the G.I. Bill would be a falsity -- after all, many of these women would end up marrying men who would otherwise have not gone on to college had it not been for the G.I. Bill.

Moreover, the G.I. Bill may have stunted the training of teachers during the postwar era – by limiting females' opportunities in higher education, the development of the nation's teaching core may have been adversely affected. In the face of the impending baby boom, the nation would experience an unprecedented demand for teachers in the coming decade, and presumably, some aspiring teachers, who were overwhelmingly female, were unable to achieve their training due to the massive influx of veterans into higher education during this time.

To this end, the 1944 legislation, by implicitly limiting the higher educational opportunities of women, would serve to further limit the total productive capacity of the United States during the postwar era. Even though the G.I. Bill heavily invested in the human capital and educational infrastructure of the nation, had female "Rosie the Riveters" also been afforded the opportunity to achieve a higher education on par with the benefits bestowed to the returning veterans, the nation's economy would have been made even stronger as females would have continued their profound integration into America's social and economic mainstream that had been jump-started by the war.

Certainly, changing social roles and norms motivated many of the trends occurring in the social and economic experiences of females during the postwar era. But national policy also had the ability to influence the postwar experiences of females – by encouraging or discouraging market work, domestic life, or educational attainment, policymakers can affect change in the day-to-day lives of the individual female. Thus, the G.I. Bill, by heavily encouraging the

economic and educational enfranchisement of the returning veterans, truly presented an inopportunity of gender to American females seeking higher education during the postwar era.

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Figure 9 - Enrollment at NYS Institutions

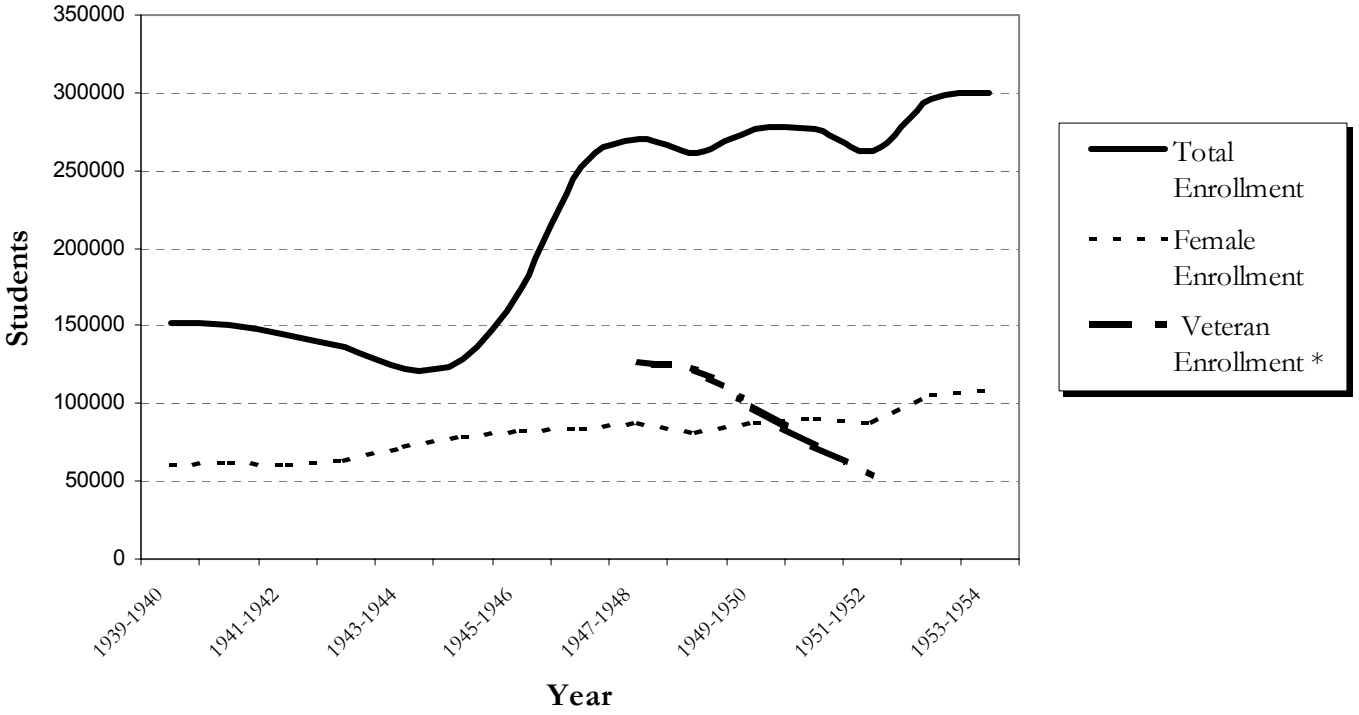

Figure 10 - Enrollment Percentages at NYS Institutions

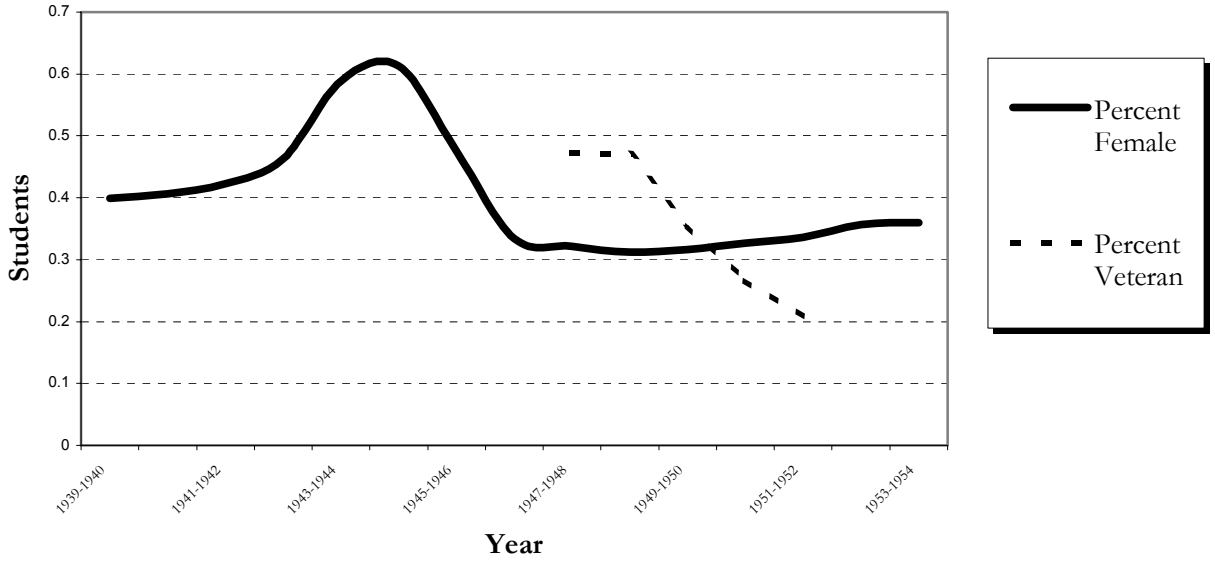

Table 6, NYS Aggregate Trends, Totals

Year	Undergrad Women	Undergrad Total	Unclassified Women	Unclassified Total	Grad Women	Grad Total	BA Women	BA Total	H.Deg Women	H. Deg Total	No Deg Women	No Deg Total
1939-1940	45291	115097	6601	15522	9434	23588	8661	21216			804	1453
1940-1941	45154	113957	6864	15449	9879	23562	8625	21706			640	1283
1941-1942	46379	112628	7560	16397	7923	17726	9367	21620			734	1337
1942-1943	46453	105653	9693	17300	7128	13565	8937	19577			743	1000
1943-1944	46426	80235	16452	26747	9014	15319	8498	14862			881	1708
1944-1945	54694	86638	13780	24343	10625	18122	9410	14948			1044	1273
1945-1946	58478	119164	11547	27742	12340	26799	9940	16374			1501	1944
1946-1947	59320	174862	11640	40840	13171	36411	10322	24524			1562	2379
1947-1948	60627	196566	12037	34525	14511	39612	12639	31580	4089	11463	1421	2595
1948-1949	56811	190801	10850	28824	13916	41420	11986	40321	4439	12230	1435	3502
1949-1950	60760	195511	11864	33396	14744	47439	11879	44783	4544	13441	1255	3055
1950-1951	61148	188090	14280	34142	15098	54568	10079	337851	4514	14402	891	2979
1951-1952	60339	175963	12907	33310	14897	53198	13102	39942	4682	13968	917	2254
1952-1953	65638	181568	23663	62239	16259	51753	13007	36262	4596	13523	1040	2216
1953-1954	66283	180271	23924	66662	17679	53190	12734	34483	4595	13122	892	2300

Table 7, NYS Aggregate Trends, Percentages

Year	Percent Undergraduate	Percent Unclassified	Percent Graduate	Percent BA	Percent H. Deg	Percent Grad
1939-1940	39.35%	42.53%	39.99%	40.82%	.	55.33%
1940-1941	39.62%	44.43%	41.93%	39.74%	.	49.88%
1941-1942	41.18%	46.11%	44.70%	43.33%	.	54.90%
1942-1943	43.97%	56.03%	52.55%	45.65%	.	74.30%
1943-1944	57.86%	61.51%	58.84%	57.18%	.	51.58%
1944-1945	63.13%	56.61%	58.63%	62.95%	.	82.01%
1945-1946	49.07%	41.62%	46.05%	60.71%	.	77.21%
1946-1947	33.92%	28.50%	36.17%	42.09%	.	65.66%
1947-1948	30.84%	34.86%	36.63%	40.02%	35.67%	54.76%
1948-1949	29.78%	37.64%	33.60%	29.73%	36.30%	40.98%
1949-1950	31.08%	35.53%	31.08%	26.53%	33.81%	41.08%
1950-1951	32.51%	41.83%	27.67%	2.98%	31.34%	29.91%
1951-1952	34.29%	38.75%	28.00%	32.80%	33.52%	40.68%
1952-1953	36.15%	38.02%	31.42%	35.87%	33.99%	46.93%
1953-1954	36.77%	35.89%	33.24%	36.93%	35.02%	38.78%

Table 8, Comparative Snapshots, 1945-46, 1947-48

Institution Type	1945-1946	1947-1948	Percent Enrollment
Universities	57.18%	52.79%	Of Total
	51.30%	46.09%	Female of Female
		58.74%	Veteran of Veteran
Trad Wom Col	9.26%	7.32%	Of Total
	19.53%	21.20%	Female of Female
		1.30%	Veteran of Veteran
Prestige	56.16%	50.01%	Of Total
	51.09%	45.24%	Female of Female
		55.88%	Veteran of Veteran
Public	9.49%	12.70%	Of Total
	10.30%	12.93%	Female of Female
		12.35%	Veteran of Veteran

Institution Type	1945-1946	1947-1948	
Universities	99,320	142,913	Total Enrollment
	42,254	40,179	Female Enrollment
	42.54%	28.11%	Percent Female
	12	13	No. Institutions
Trad Wom Col	16082	19820	Total Enrollment
	16082	18484	Female Enrollment
	100.00%	93.26%	Percent Female
	19	20	No. Institutions
Prestige	97558	135378	Total Enrollment
	42077	39436	Female Enrollment
	43.13%	29.13%	Percent Female
	10	10	No. Institutions
Public	16480	34377	Total Enrollment
	8483	11276	Female Enrollment
	51.47%	32.80%	Percent Female
	18	24	No. Institutions

Table 9, List of Selected Institutions*

Institution Name	Type
Adelphi College	College of Liberal Arts
Alfred University	University
Bard College	College of Liberal Arts
Bennet Junior College	Junior College
Briarcliff Junior College	Junior College
Brooklyn College	College of Liberal Arts
Canisus College	College of Liberal Arts
Cazenovia Junior College	Junior College
City College	College of Liberal Arts
Clarkson Institute of Tech	College of Engineering
Colgate University	College of Liberal Arts**
College of Mount St. Vincent	College of Liberal Arts*
College of New Rochelle	College of Liberal Arts*
College of St. Rose	College of Liberal Arts*
Columbia University	University
Concordia Collegiate Institute	Junior College
Cooper Union	College of Engineering
Cornell University	University
Elmira College	College of Liberal Arts
Finch Junior College	Junior College
Fordham University	University
Good Counsel College	College of Liberal Arts*
Hamilton College	College of Liberal Arts
Hartwick College	College of Liberal Arts
Hobart College	College of Liberal Arts**
Hofstra College	College of Liberal Arts
Houghton College	College of Liberal Arts
Hunter College	College of Liberal Arts*
Iona College	College of Liberal Arts**
Ithaca College	College of Liberal Arts
Juilliard School of Music	School of Music
Keuka College	College of Liberal Arts*
Ladycliff College	College of Liberal Arts*
LeMoyne College	College of Liberal Arts
Long Island University	University
Manhattan College	College of Liberal Arts**
Manhattan School of Music	School of Music
Manhattanville College of the Sacred Heart	College of Liberal Arts*
Marian College	College of Liberal Arts**
Marrymount College	College of Liberal Arts*
Maryknoll Seminary	College of Liberal Arts **
Maryknoll Teachers College	College of Liberal Arts*
Mount St. Joseph Teachers College	Teacher's College
Nazareth College	College of Liberal Arts*
New School for Social Research	College of Liberal Arts

New York University	University
Niagara University	University
Notre Dame College of Staten Island	College of Liberal Arts*
Paul Smiths College	Junior College
Polytechnic Institute of Brooklyn	College of Engineering
Queens College	College of Liberal Arts
Russell Sage College	College of Liberal Arts*
Sarah Lawrence College	College of Liberal Arts*
Skidmore College	College of Liberal Arts*
St Bernardine of Siena College	College of Liberal Arts
St John's University	University
St. Bonaventure's College	College of Liberal Arts
St. Francis College	College of Liberal Arts **
St. Joseph's College for Women	College of Liberal Arts*
St. Joseph's Seminary - College of Letters	College of Liberal Arts **
St. Lawrence University - College of Letters	College of Liberal Arts
State Teachers College - Geneseo	Teacher's College
State Teachers College - Brockport	Teacher's College
State Teachers College - Buffalo	Teacher's College
State Teachers College - Cortland	Teacher's College
State Teachers College - Fredonia	Teacher's College
State Teachers College - New Paltz	Teacher's College
State Teachers College - Oneonta	Teacher's College
State Teachers College - Oswego	Teacher's College
State Teachers College - Plattsburg	Teacher's College
State Teachers College - Potsdam	Teacher's College
Syracuse – Forestry	School of Forestry
Syracuse University	University
Teachers College – Albany	Teacher's College
Union University	University
University of Buffalo	University
University of Rochester	University
Vassar College	College of Liberal Arts
Wagner Memorial Lutheran College	College of Liberal Arts
Webb Institute	School of Architecture
Wells College	College of Liberal Arts*
William Smith College	College of Liberal Arts*
Yeshiva University	University **

Selected Institutions are those institutions for which NYS Department of Education data is available for at least 10 out of 15 years, and U.S Office Education data with veteran enrollments available for at least 2 out of 4 possible years.

** Signifies an all female college*
*** Signifies an all male college*

Table 10, List of Traditionally Male and Female Institutions in NYS

Female	Male
Barnard College	Cathedral College of The Immaculate Conception
Bellamine College	Colgate University
College of Mount St. Vincent	Columbia College
College of New Rochelle	Hobart College
College of St. Rose	Iona College
College of The Sacred Heart	Manhattan College
D'Youville College	Marian College
Good Counsel College	Maryknoll Seminary
Hunter College	NYU - University College
Keuka College	St. Francis College
Ladycliff College	St. Joseph's Seminary - College of Lette
Manhattanville College of the Sacred Heart	Union College - Union University
Marrymount College	Yeshiva University
Maryknoll Teachers College	
Nazareth College	
Notre Dame College of Staten Island	
Rosary Hill College	
Russell Sage College	
Sarah Lawrence College	
Skidmore College	
St. Joseph's College for Women	
Wells College	
William Smith College	

Table 11, Selected Prestigious Institutions

Columbia University
Cornell University
New York University
University of Rochester

Figure 11
Percentage Female of Total Enrollment

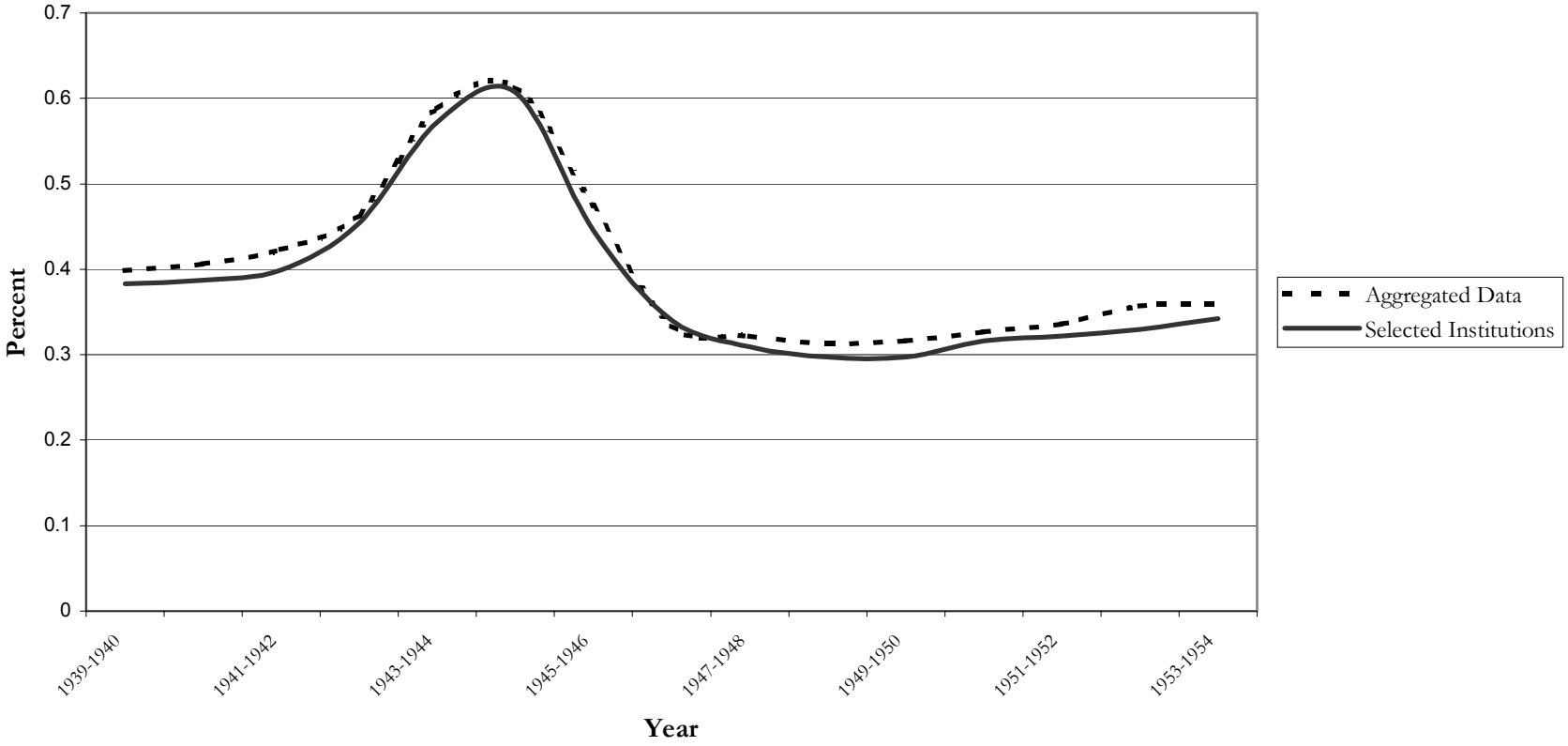

Figure 12
Enrollment Levels - Aggregated and Selected Institutions

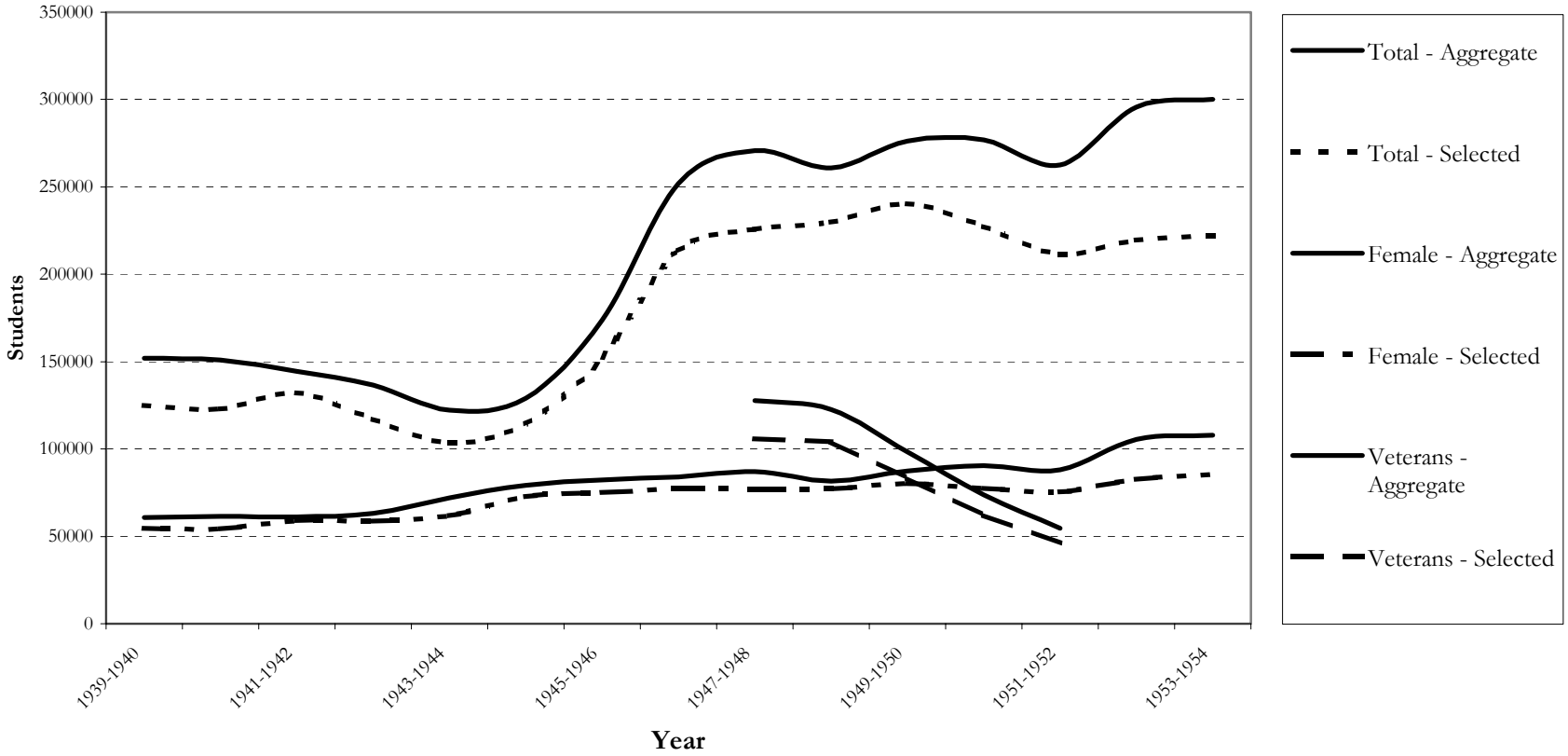

Table 12, Descriptive Statistics, NYS Selected Institutions Means (SD)

PERCENT WOMEN	0.484	(0.41	)
TOTAL WOMEN	858.363	(2117.93	)
TOTAL ENROLLMENT	2133.880	(5542.49	)
PERCENT VETERAN	0.061	(0.23	)
TOTAL VETERAN	255.929	(1442.81	)
PERCENT VETERAN MALE	0.194	(0.39	)
REPORT NYS	0.107	(0.31	)
REPORT VET	0.276	(0.45	)
REPORT VET YEAR	0.267	(0.44	)
POST 1946	0.533	(0.50	)
TIME	8.000	(4.32	)
TIMESQ	82.667	(71.12	)
WOMEN COLLEGE	0.217	(0.41	)
MEN COLLEGE	0.108	(0.31	)
UNIVERSITY	0.157	(0.36	)
LIBARTS	0.532	(0.50	)
EDUC	0.155	(0.36	)
ENGINEERING	0.036	(0.19	)
JUNIOR COLLEGE	0.072	(0.26	)

Table 13, Generalized Least Squares Regression Results, Coefficients (t Statistics)

Relative Female Enrollment			Absolute Female Enrollment		
PVET	**-0.0327991**	(**-1.72**)	*TENROLL*	**0.3459775**	(**56.7**)
PVETMALE	-0.0204314	(-0.95)	*TVET*	**-0.0349961**	(**-3.67**)
POST46	-0.1086541	(**-3.88**)	*PERVETMALE*	35.30311	(0.61)
TIME	**0.0406029**	(**5.56**)	*POST46*	**-345.161**	(**-4.38**)
TIMESQ	**-0.0019902**	(**-5.42**)	*TIME*	**49.93984**	(**2.26**)
WOMCOL	**0.5480546**	(**21.4**)	*TIMESQ*	**-1.945776**	(**-1.75**)
MENCOL	**-0.3190016**	(**-10.4**)	*WOMCOL*	**469.297**	(**5.09**)
UNIV	0.0630823	(1.42)	*MENCOL*	**-253.078**	(**-2.28**)
LIBARTS	**0.1563224**	(**3.66**)	*UNIV*	**-92.08171**	(-0.55)
EDUC	**0.383438**	(**8.63**)	*LIBARTS*	132.8838	(0.86)
ENGIN	**-0.2399317**	(**-4.04**)	*EDUC*	184.7671	(1.15)
JC	**0.4832397**	(**9.63**)	*ENGIN*	**-593.8059**	(**-2.77**)
CONS	**0.1771561**	(**3.93**)	*JC*	86.41223	(0.48)
			CONS	-64.05714	(-0.41)
n	1245		n	1245	
Wald Chi2	1850.47		Wald Chi2	4201.17	

*Coefficients for non-reporting dummy variables omitted
AR(1) Autocorrelation between panels assumed
Coefficients bolded at 10 percent confidence level