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Honors Thesis

THE IMPACT OF GAP YEARS ON ACADEMIC OUTCOMES FOR WOMEN:
A CASE STUDY FROM THE MISSIONARY AGE CHANGE

by
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Submitted to Brigham Young University in partial fulfillment
of graduation requirements for University Honors

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April 2018

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ABSTRACT

THE IMPACT OF GAP YEARS ON ACADEMIC OUTCOMES FOR WOMEN: A CASE STUDY FROM THE MISSIONARY AGE CHANGE

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Bachelor of Science

Young adults throughout the United States and other countries participate in “gap years,” or time away from school, often for travel, work, or volunteering. This practice is promoted as a way to mature and refocus. However, some worry that it lowers the likelihood of college completion. Previous literature has investigated the academic, social, and personal benefits of gap years with mixed results; however selection into gap years confounds the true impact with unobservable personal characteristics. To overcome selection issues, I exploit an exogenous policy change that lowered age requirements for missionary service, a unique type of gap year, resulting in a large increase in women serving. Using data from Brigham Young University students before and after this policy change and an instrumental variable approach I measure the impact of taking time away from school on academics. Results from the analysis demonstrate that women who go on missions have higher GPAs and unique patterns of major selection. This research contributes to the understanding of women’s experience in post-secondary education. It is also important for university administrators to understand as they consider how to mentor and recruit students.

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I. Introduction

As adolescents approach high school graduation, most are encouraged to go to college by mentors or family. Over time the number of young adults enrolling and gaining a college education has increased. For example, college enrollment in the United States increased by 17% between 2004 and 2014 (National Center for Education Statistics). Now it is almost as if the pathway from high school to college to career is the default option for students. However, is the direct path truly the most efficient in this case?

The significant number¹ of college age adults choosing to participate in a “gap year” suggests that alternate tracks through education may be better. The American Gap Association defines gap year as, “an experiential semester or year ‘on,’ typically taken between high school and college in order to deepen practical, professional, and personal awareness” (American Gap Association, “About”). The underlying belief with gap years is that students do not receive all of the preparation or experience they need through formal schooling. Possibilities for gap years are plentiful, including travel, working, and volunteering.

Members of the Church of Jesus Christ of Latter-day Saints have a unique take on the gap year. Young men and women have the opportunity to serve as missionaries. Generally young men serve for two years and young women typically serve for 18 months. These young adults go to places throughout the world, from Boise, Idaho to Buenos Aires, Argentina to Busan, South Korea, with the purpose of serving and teaching

¹ As of 2009 30% of undergraduate students in the United States participated in some type of educational delay or gap year (Hoe 2014, 4)

² Tom Stehlik (2010) reports that between 1990 and 2000 the number of young adults signing up for volunteer programs increased six-fold (364).

people in those locations. Many of them learn new languages and experience new cultures; however they all sacrifice school, work, or other interests to go. Although there is a cost, both monetary- and opportunity-wise, gap year statistics and the LDS Church suggest that there are also benefits. I hope to analyze missions through the perspective of gap years, and thus look at potential benefits such as improved academics and self-confidence.

This potential relationship is especially important to understand because more and more young adults are choosing to take gap years, including more members of the LDS Church serving missions. On October 6, 2012 Thomas S. Monson, President of the Church of Jesus Christ of Latter-day Saints, announced to members gathered worldwide that the age that young men and women could go on missions had changed. He stated:

I am pleased to announce that effective immediately all worthy and able young men who have graduated from high school or its equivalent, regardless of where they live, will have the option of being recommended for missionary service beginning at the age of 18, instead of age 19.... able, worthy young women who have the desire to serve may be recommended for missionary service beginning at age 19, instead of age 21 (Monson 2012, 5)

Since most young men already chose to serve missions, this change impacted the age at which they served, but did not dramatically increase numbers. For women, on the other hand, the two-year drop in the age requirement for women resulted in many more women serving missions. Economic theory suggests that the larger age range that women can now choose to serve at would increase their overall utility and result in a greater quantity of female missionaries. Additionally, by the age of 21 many young adults are almost

done with college, are in serious relationships, or have other responsibilities that may make it harder to go on a mission for 18 months.

Missions are a specific type of gap year, but their effect likely has similarities to the impact of other gap experiences. Additionally, the age requirement change provides an excellent way to measure this effect since it led to a large increase of women serving at a younger age. Through this research I hope to determine the impact missionary service and gap years have on female academic outcomes. In section II I explore previous research and the need for greater insight. Section III outlines the data and important summary statistics for the sample. I then review the economic justification of inquiry and methods for analysis in sections IV and V. Following is a presentation of statistical analysis and discussion of findings in section VI before I offer concluding thoughts and recommendations for future research.

II. Literature Review

Missions

In the past 30 years taking a "gap year" before or during college has become an increasingly common practice. Thus, the efficacy of this practice has drawn the interest of researchers. Previous academic literature has supported the benefits of gap years before or during college on the academics and focus of college students (Birch and Miller 2007; Hoe 2014; Stehlik 2010; Tenser 2015). However, there has been little research on the impact of missions as a very specific and unique type of gap year program.

Devin G. Pope did study the impact of missionary service and the benefit language skills can have on students' academic success (2008). He found that students who went on missions received higher grades and took more credits when they returned

(239). He discusses that this effect may be due to increased maturity and ability to work hard among returned missionaries (241). One of the purported benefits of gap years is that students are more mature and focused when they enter college. Missions specifically challenge, stretch, and teach young adults new skills that have the potential to benefit them in college. While Pope's emphasis was on language skills of returned missionaries, my research focuses on the "soft skills" developed during more than a year away from college, such as better study habits and self-confidence.

Gap Years

While the practice of taking time off before or during college seems to be growing in the United States² (American Gap Association, "Research Statement"), research on gap years has shown both negative and positive effects. When the gap year is unstructured or consists simply of employment it is more likely to lead to reduced performance and college graduation rates (Bozick & DeLuca 2005, 544-45). Students who experience this type of gap year are more commonly from minority and low-income demographics. They delay further schooling because they cannot afford it or there are social pressures and traditions that do not encourage college. These students are also more likely to attend two-year institutions, work while in school, and be married and have children during college (Horn, Cataldi, and Sikora 2005). These characteristics often negatively impact completion rates. Thus, if students are disadvantaged in some way, taking time away from school, even for only one year, may not be the best decision.

Additionally, older and non-traditional students experience college and post-secondary education differently. In a study among students in Italy, Gilardi and

² Tom Stehlik (2010) reports that between 1990 and 2000 the number of young adults signing up for volunteer programs increased six-fold (364).

Guglielmetti (2011) find that age itself is not a significant factor, but non-traditional students, who are older, employed, lower income, or non-residents, need to find more meaning in their studies in order to succeed. Calcagno, Crosta, Bailey, and Jenkins (2007) also investigate the differences between younger and older students, and discover that these groups have differing probabilities of graduation. The probability of graduation increases for older students when they enroll in remedial classes and have more flexibility (796-97). However, the older age group in this study is 25 years old or more, which is much older than the typical gap student or returned missionary, so these findings may not translate to the population I am interested in.

If a gap year can have such negative effects, why are they promoted by universities and businesses alike? Randye Hoder (2014) claims that the worries about lower grades and college completion are myths; gap year students actually have higher GPAs and are more focused and prepared for college. However, the quantity of research demonstrating negative effects and the careful statistical methods used show that it is credible and cannot be disregarded. The key may lie in the type of gap time—structured or unstructured, volunteering or traveling. Hoe (2014) addresses these differences in her dissertation. She studies the “disconnect” between benefits of a gap year and general detriments of delaying post-secondary education (vii). In Hoe’s study a gap year is defined as a “one-year delay of postsecondary education for the purpose of personal growth and learning, often including travel, work and/or service” (60). In that context, Hoe finds that students who choose gap years tend to come from more advantaged backgrounds: predominately white, better prepared academically, higher probability for future academic success, and wealthier families (55). That is quite a difference compared

to the majority of college delayers who are disadvantaged in some way. Additionally, Hoe shows that when gap years include travel students are more likely to obtain graduate degrees and have higher GPAs than those whose gap years did not include travel (207-8). Since LDS missions generally include travel and personal growth, it is likely that they fit into Hoe's definition of a gap year. Furthermore, volunteer related gap years, as missions could be described, may constitute "transformative learning" experiences and have an impact on future schooling and employment (Stehlik 2010, 374).

How does a gap year impact students? Tenser (2015) interviewed 12 students that participated in various gap year programs before entering their freshman year of college. Through their combined experiences she concludes that while gap years may not have a steady effect on grades or retention, gap year students are different from the rest of the student body. Their experiences, which expose them to risk, new relationships, and independence, help them develop "sovereign engagement," which results in a "thoughtful and authentic" approach to education (Tenser 2015, 76). Thus, they have different needs from other students, but can also be an asset to universities (177). Tenser provides a necessary reminder that while there may be overall trends, the response to gap years is individual-specific and can vary widely.

That being said, students, parents, and university administrators require an understanding of general trends and effects in order to make decisions. In a quantitative analysis Birch and Miller (2007) found that students who delay university study for a one-year gap time have higher academic performance (341). This impact is the strongest for those in the bottom of the ability distribution, implying that students who have struggled academically may benefit most from structured experiences away from school.

It is also possible that gap years may be an additional solution or strategy for preparing adolescents for the college experience (Venezia 2013). Evidence of increased college readiness can be seen in higher grades and graduation levels.

Academic Experience for Women

With the recent mission age requirement change and increase in the number of women serving missions,³ this is a great opportunity to explore the potential impact on academic outcomes and choices of women in college. Research has shown that men are usually far more likely to have a disrupted college completion pathway, which gives women an advantage in their college education (Ewert 2010). Indeed, other research has found that today more women than men obtain college degrees (Buchmann and DiPrete 2006). However, will women be able to retain their lead if their university education is also disrupted?

It is possible that certain types of disruption, such as gap years and missions, can actually benefit women. The literature shows that women commonly avoid competitive education and work environments because they have less self-confidence in certain skills, such as math, compared to men with similar ability levels (Pope 2017). Wiswall and Zafar (2014), in a study about what factors influence major choice, found that women were more likely to choose humanities majors than men, and after graduation men were more likely than women to be employed in business and engineering fields. This difference could be due to preference, skills, or future outlook. However, the fact that women generally view themselves as less intelligent compared to the self-view of men on

³ Table 2 shows that in the sample from 2006 to 2017, 4,000 female BYU students served missions before the policy change, whereas in the years afterward 9,658 female students served missions.

the same level suggests that lack of confidence could be a contributing factor. Kirkwood (2009) finds that lack of self-confidence among female entrepreneurs limits their ability to be successful. A mission can teach young adults many skills, including confidence and determination. Thus, in my research I may see that women returning from missions choose majors that are more difficult or competitive because they feel more confident in their skills and abilities.

Major Choice

While the literature on women's academic experience suggests one possible trend could be toward more competitive majors, it is important to understand the factors that may influence any choice of major. Research demonstrates that future earnings and job type, financial incentives, skills and aptitudes, preferences, and family, personal, and societal expectations all play a role in the choices of college students (Arcidiacono 2004; Beffy, Fougere, and Maurel 2009; Denning and Turley 2015; Wiswall and Zafar 2014). However, the effect of gap years, and particularly missions, has not been studied.

A study by Arcidiacono (2004) suggests that if gap years help students learn about their own preferences and abilities, or fundamentally change these traits, then it would result in a change in major. Additionally, some research suggests that while future earnings have an impact on major, tastes and skills play a more significant role in this decision (Beffy, Fougere, and Maurel 2009). Thus, I expect to see some difference in the behavior of returned missionaries compared to other students regarding majors.

This Study

This analysis draws on and adds to the research foundation of gap years, female academic experience, and major choice. It contributes to prior research on gap years by

using an exogenous instrument to identify the true impact of a specific type of travel and service-oriented gap year—missionary service. Thus, it overcomes problems with endogeneity and self-selection, leading to estimates that are more causal in nature. I also focus on quantitative outcomes to determine broader patterns in the experience of women with gap years, which I am able to measure through a large panel dataset. By looking specifically at the effect of missionary service on women's GPA and major choice I add to the understanding of women's academic and career choices. Additionally, this study contributes to the literature on major choice, as I investigate missions and gap years as a factor in major selection.

III. Data Description

Source and Participants

The data for this analysis come from Brigham Young University undergraduate students who were enrolled between Fall 2006 and Fall 2017. The BYU academic reporting office provided this data, and I appreciate their willingness to facilitate this research. During this period there were 82,280 different students.⁴ Of these students, 49.3% were female and 3.33% were from outside of the United States. They ranged in age from 14 to 76, with early high school graduates, traditional young adults, and seniors returning to school after their families are grown attending together. However, the average age of BYU students during this period was 22.1, which is close to the national average (National Center for Education Statistics). For the purposes of this analysis, I dropped those who were older than 30 while at BYU, because they most likely have

⁴ The dataset does not contain information on religion of students. However, as the proportion of non-LDS students at BYU is small and most likely constant over time, this should not significantly influence the results.

unique characteristics regarding grades, major, and missionary service. After dropping older observations as well as observations for the incomplete Fall 2017 semester and some outliers that had errors in the data, the final sample size is 78,938 students.

Table 1 shows the summary statistics concerning the core sample of BYU students in this study, which is women enrolled from 2006-2017, and compares variables of interest between students who were and were not impacted by the policy change. (A table comparing the full sample of men and women can be found in Appendix A.) Of the sample of women, 20,654 or 51.8%, graduated between Fall 2006 and Winter 2017, and on average students graduate in 8.15 semesters. There are clear similarities and differences between the sample of BYU students before and after the policy change. Average GPA, age, and the number of major changes are significantly less after the change, most likely because the later sample include many students who have not graduated. Of particular note is the proportion of female students who served missions, which increased after the policy change.

Treatment Procedure

In my analysis I am interested in the impact of missionary service and the change in missionary age policy. I created two treatment variables to identify these effects. The variable “after mission policy change” represents whether or not a student’s potential for going on a mission was affected by the policy change. It includes all women who were 19 or younger in Fall 2012 when the change was announced, since the new policy allowed 19 year old women to serve. I also created a dummy variable indicating whether or not a student served a mission, regardless of when or how long they served. The

policy treatment variable will be a useful exogenous instrument for missionary service in further analysis.

Table 1: Comparison Summary Statistics for Female BYU Students 2006-2017

Variable	Full Sample		Before Change		After Change	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
After mission policy change	0.442	0.497	-	-	-	-
International Student Status	0.028	0.166	0.031	0.174	0.023	0.151
ACT	27.148	3.531	26.792	3.583	27.736	3.360
GPA	3.175	0.983	3.259	0.833	3.025	1.188
Age	20.705	2.107	21.038	2.271	20.117	1.622
Age at graduation	22.784	1.490	22.940	1.541	22.060	0.924
Served a mission	0.308	0.462	0.247	0.431	0.415	0.493
Number of major changes	1.105	1.343	1.468	1.412	0.465	0.911
Sample	39,865		22,926		16,939	

Variables of Interest

Missionary service, and its representation of a gap year, is the main explanatory variable of interest. While this most likely has an effect on men, I will be focusing on women in this analysis. I am interested in several dependent variables that a mission or gap year could potentially influence. Specifically, I will look at GPA and major choice.

Missionary Service

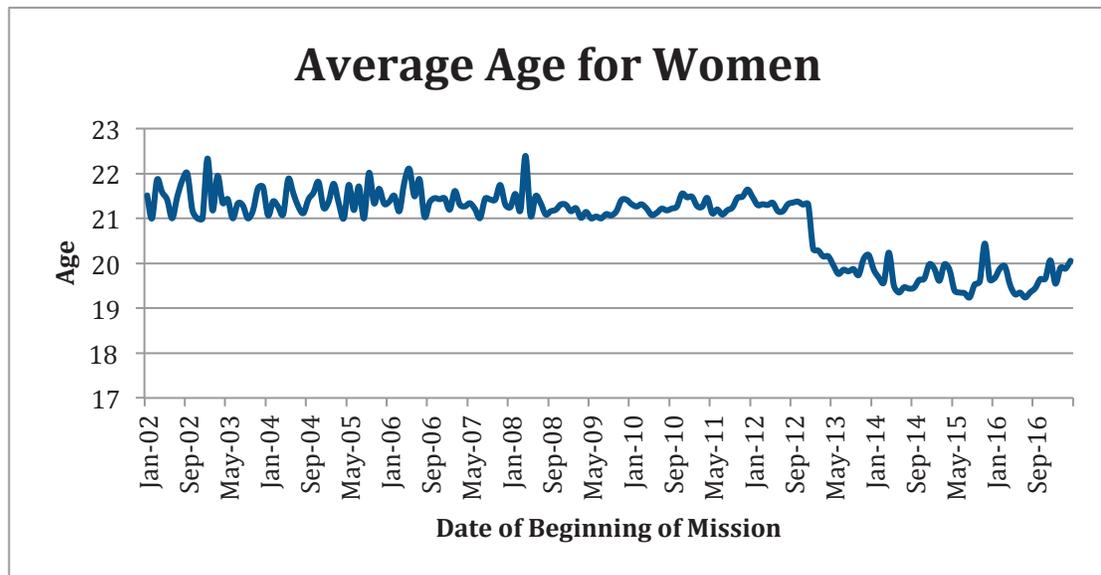
Overall, 60.8% of BYU students serve a mission, with 92% of men and 30.8% of women serving. The change in missionary age policy did influence the age at which BYU students went on missions. Since the policy change was announced in the middle of Fall semester 2012, I have separated the data on missionary service at December 2012, assuming that students who were already enrolled at BYU would not drop out of class to go on a mission, but instead would wait for the end of the semester. After the change, the

average age at the beginning of a mission declined by more than two years for women and the number of women who went on missions increased by more than 5,000 (Table 2). This is particularly striking because the sample of students unaffected by the age change is larger than those that it influenced. Additionally, women responded quickly to this change, as shown in Figure 1, where the average age of students leaving on missions drops dramatically shortly after the change and then remains reduced at about 19.5 years old.

Table 2: Age and Number of Missionaries from BYU

Sample	Mean	Standard Deviation	Size
All Missionaries	19.434	0.963	48,907
Women	20.397	1.135	13,658
Women before age change	21.273	0.721	4,000
Women after age change	19.715	0.908	9,658

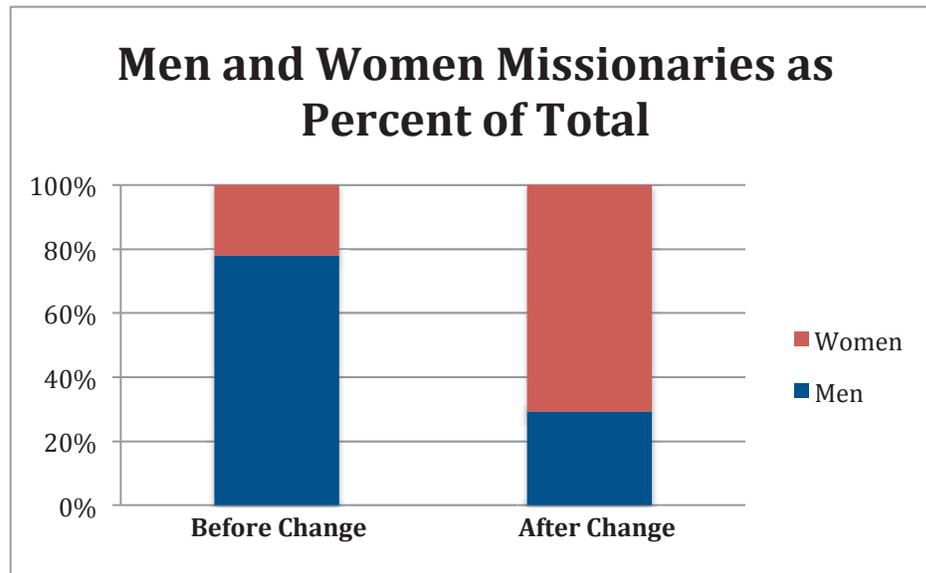
Figure 1: Average Age of Women Leaving on Missions



When the percentage of women serving missions before and after the policy change is compared, it is easy to see that the number rose from less than a quarter to about 40% (see Table 1). Many more women are serving, so there has likely been an

observable impact on the overall student body of BYU. At the very least the demographic of the student body has changed because many women, and not just men, are returned missionaries. The goal of this analysis is to determine this effect so that students, faculty, and administrators can better understand the new situation at the university. Another interesting development is that after the age change, the female share of the total missionary population increased, actually surpassing the proportion of men (see Figure 2). One possible reason for this is that after the initial announcement there was a large wave of women who left to serve missions. I expect in the future the ratio will even out with men comprising about 66% of the returned missionary population at BYU, and women about 33%.

Figure 2: Number of Men and Women Serving Missions as a Portion of the Total



While the change in the age requirement for missionaries certainly impacted the quantity and age of those serving that does not necessarily mean that there is an impact on university related outcomes such as GPA or major choice. Variables describing

female students at BYU show fundamentally different statistics before and after the change. However, whether this result is due to the specific policy, other factors, or just time cannot be concluded without turning to statistical regression, which I will address in Section VI.

GPA

The literature suggests that structured gap years can have a positive impact on students' academic outcomes afterward. Thus, I am interested in the impact of a mission on women's GPA. As seen in Table 3 and Figure 3 the raw data supports the literature. In general, women at BYU who serve missions have higher GPAs than those who do not. The difference is about 0.10, which constitutes about one-third of a letter grade. In the world of scholarships and graduate school applications this amount could make a significant difference. On the other hand, the summary statistics in Table 1 suggest that students impacted by the policy change have lower GPAs, even though there are a larger proportion of returned missionaries. Through more careful statistical analysis I hope to clarify this relationship.

Figure 3: Average GPA for Women Students at BYU

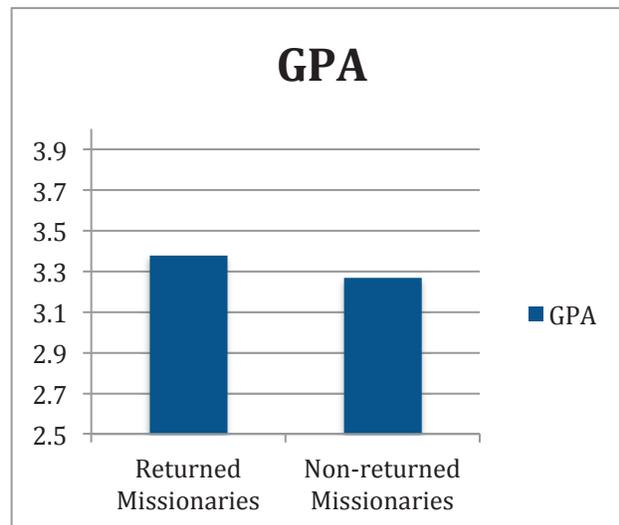


Table 3: Averages for Dependent Variables of Interest for Women

Variable	GPA	Proportion of Female in Major	Median Salary for Major	STEM Major	Foreign Language Major	Limited Enrollment Major	Meaningful Major
Missionaries	3.378	0.653	76,517.32	0.183	0.019	0.252	0.312
Non-Missionaries	3.267	0.670	76,409.96	0.184	0.007	0.278	0.334

Major Choice

Majors offered by BYU range from accounting to wildlife and wildlands conservation. Of interest in this study is how missionary service affects major choice. This time away from school could impact individuals' tastes, preferences, goals, and abilities. The literature demonstrates that those are all factors that impact major choice as well. These changes occur on an individual basis, but I am interested in whether or not there are overall patterns in the choices of returned missionaries. Are returned missionaries more likely to choose a major that has more or less women?⁵ Do they migrate to more competitive majors or ones with higher potential salaries? Are they more or less attracted to STEM fields? Are they more likely to choose foreign language majors due to exposure to them on a mission? Does the service-oriented mission experience cause them to pursue fields with higher meaning?

In this sample, some proportion of returned missionaries fit into each of these categories, although major change into foreign language majors is low. Switching in to more competitive majors, ones with a lower proportion of women, and ones with higher predicted salaries⁶ are the most common choices for both men and women at BYU.

⁵ See Appendix B for a list of the proportion of women in each major.

⁶ The salary measure comes from a survey of the median annual salary for college graduates, with the expected median salary being the same for all students in the same major.

Another interesting finding from the basic summary statistics is that the major-change choices of male and female returned missionaries are very similar. About 50% of both groups change to majors with a greater male percentage, and a quarter switch from open to limited enrollment programs. However, men and women differ significantly when it comes to majors with high meaningfulness,⁷ with 28% of women changing to a high meaning major, but only 11% of men changing. Table 4 shows how returned missionaries at BYU choose to change their major after their mission.

Table 4: Proportion of Returned Missionaries Who Change Major After Mission

Major Characteristics	All Returned Missionaries		Female Returned Missionaries		Male Returned Missionaries	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Less Women in Major	0.542	0.498	0.531	0.499	0.545	0.498
Higher Salary	0.316	0.465	0.332	0.471	0.312	0.463
Limited Enrollment	0.272	0.445	0.251	0.433	0.277	0.447
STEM	0.179	0.383	0.120	0.325	0.194	0.395
Foreign Language	0.032	0.175	0.022	0.145	0.034	0.182
High Meaningfulness	0.145	0.352	0.280	0.449	0.112	0.315

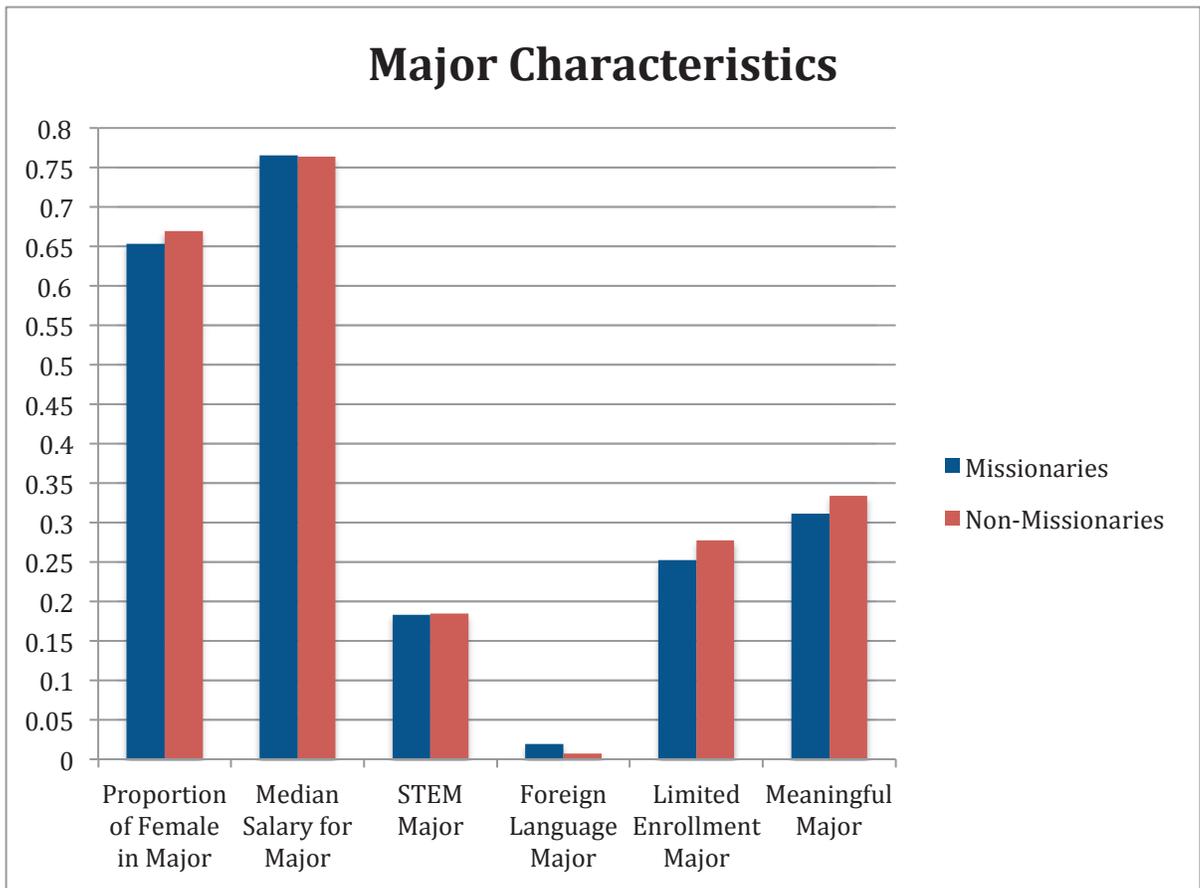
Figure 4 and Table 3 compare the major choices of women who do and do not go on missions. For those who have graduated, their final major was used, and for those who are currently in school their current major was used for the comparison.

Additionally, I look only at a students' primary major. Female returned missionaries tend to choose majors with a slightly higher estimated median salary, a lower proportion of

⁷ The high meaningfulness major measure was taken from a survey of college graduates, which asked if they felt their career was meaningful. Highly meaningful is defined as 70% or more of respondents finding meaning. These majors are listed in Appendix C.

women in the major, and more often choose foreign language majors. The later distinction makes sense because they may receive more exposure with foreign languages through their missionary experience. However, findings by Pope (2008) indicate that this difference is not significant. In all other major categories analyzed here, there are more non-returned missionary women than returned missionaries. Overall, these statistics demonstrate that there are differences in the choices of returned missionaries and other women. It is not clear that this difference is due to missionary service; there could be other, non-observable, factors that cannot be determined with the raw data. Instrumental variable analysis will allow for identification of the true nature of this relationship.

*Figure 4: Major Characteristics for Women Students at BYU
(Proportion of female in major and median salary for major are averages, all others are proportions)*



IV. Economic Theory

From an economic perspective, why does taking a gap year matter? One interpretation is that structured gap experiences, such as work, volunteering, and exposure to different cultures, build human capital. This can make the individual more efficient and a superior resource to universities and future employers. In this respect, gap years are an investment and should improve outcomes in education and employment.

Gap years can also be viewed as consumption. In that respect, individuals purchase the experience and receive all of the benefits during the gap year. They have a good, enjoyable, or worthwhile time and receive utility. However, a consumption gap year is unlikely to significantly influence later outcomes or experiences beyond fond memories of a good time. Some gap years can probably be defined as an investment, and others as consumption. I suspect that missionary service falls into the former category, and my analysis will help show whether the mission experience has a lasting influence on individual outcomes.

Other significant economic aspects of missions are opportunity costs and choice. During some gap year plans individuals are able to work and gain money. However, during a mission young adults must give up time they would otherwise be using to work or gain experience and education to improve future work. Along with the general cost of a mission, an opportunity cost is also imposed. Thus, in an economic framework individuals must weigh the costs and benefits of the choice to go on a mission. Again, these can differ depending on the individual, but I would expect that for those who choose to serve the benefits outweigh the costs. This adds support to the idea that there is

some measureable difference between outcomes of returned missionaries and other students, which can be estimated through economic and statistical models.

V. Method

While the general statistics of the data provide important insight into relationships and changes over time, this approach is inadequate. In order to more accurately estimate relationships and determine causality it is necessary to use statistical regression. I will be using Ordinary Least Squares (OLS) and Instrumental Variable (IV) estimation through the statistical software Stata.

OLS is a type of linear regression, which minimizes the sum of squared residuals in order to estimate the relationship between explanatory and dependent variables. When the model assumptions hold, it provides estimates that are unbiased, consistent, and efficient. The instrumental variable approach is used when an explanatory variable is endogenous, meaning it is correlated with the error term. This is the case with missionary service because individuals choose whether to go on a mission or not, and that choice is likely correlated with unobservable personal characteristics that could also affect other outcomes. For example, a person who chooses to serve a mission may be very determined and focused, which may influence the choice to serve as well as academic outcomes. With an OLS regression it would not be possible to separate the impact of these personal traits and missionary service.

Since the missionary age policy change was exogenous, I will use this as an instrument to measure the impact of going on a mission. The instrumental variable model is estimated through two stages, known as two stage least squares (2SLS). First the endogenous variable is regressed on the exogenous instrument. Then that estimation

is used to calculate the main equation of interest. The following are the basic equations for this regression:

$$\text{Stage 1:} \quad x_i = \beta_0 + \beta_1 z_i + u_i$$

$$\text{Stage 2:} \quad y_i = \gamma_0 + \gamma_1 \hat{x}_i + \varepsilon_i$$

Where x represents the endogenous variable (missionary service), z is the instrument (policy change), and y is the dependent variable of interest (GPA or major). In stage 2 the estimate for x in stage 1 is used, and γ_1 represents the impact of the endogenous variable (missionary service) on y .

In order for a variable to be a valid instrument for an endogenous variable it must satisfy two conditions, exclusion and relevance. The exclusion condition states that the instrument cannot be correlated with the error term. Since the mission age policy change was unexpected and exogenous, it is reasonable to assume that it is not correlated with the error term. For the relevance condition to hold the instrument must be correlated with the endogenous variable. In this case, it means that the policy change must have increased the number of women serving missions. As we observed in the data description, the number of women serving missions did increase after the age change. More formal testing of the relevance condition will be included in the analysis section.

Ideally an estimator is unbiased, efficient and consistent. This is true for OLS, but not when endogeneity is present, which is likely in the case in this data. The instrumental variable approach is consistent, but biased and not efficient with endogeneity. However, since the sample size is large, almost 40,000 female students, the consistent estimates should approach their true value. Thus, the basic theory demonstrates that the instrumental variable approach will be appropriate and effective for this study.

VI. Analysis

The dependent variables of interest are GPA and the following major characteristics: proportion of women in major, log of expected median salary, STEM, foreign language, limited enrollment, and highly meaningful. These variables expand the understanding of the impact of missionary service and time away from school on later academic performance and choices.

Assumptions

Endogeneity

Since missionary service is based on personal choice, it is most likely correlated with other, observed and unobserved, factors, which means there is a potential for endogeneity through omitted variable bias. The presence of endogeneity violates the underlying assumptions of the OLS model. However, using 2SLS with a proper instrument corrects for endogeneity and provides consistent estimators. To check that 2SLS is the appropriate model I performed a hausman test comparing the coefficient estimates of OLS and 2SLS. The regressions with each of the dependent variables of interest were significantly different between OLS and 2SLS, thus indicating the presence of endogeneity and the need for instrumentation.

Instrumental Variable Conditions

Before proceeding with the 2SLS estimation, it is necessary to address the relevance and exclusion conditions. The correlation between women treated by the policy and women who go on missions is 0.256. While this is not a particularly large correlation, when the mission variable is regressed on the treatment variable there is a positive and significant relationship. Thus, with 99% confidence we can say that being

impacted by the age policy change is related to an increase in likelihood of mission service. Since I do not have information about the individual errors in the sample, I cannot formally test for the exclusion condition. However, as discussed in section V, it is reasonable to assume that this condition holds because the policy change was exogenous.

Results

Due to the results from the hausman tests for endogeneity, I use the instrumental variable approach, 2SLS model, for the remaining analysis. The presence of heterogeneity was detected so all estimates were calculated with robust standard errors. Initial IV estimates for the female students show that the impact of going on a mission is an increase in GPA, expected future earnings, and probability of being in a STEM major as seen in Table 5. On average going on a mission also decreases the proportion of women in a student's major and the probability that a student will major in foreign language, limited enrollment, or high meaningfulness majors. For the sake of comparison, basic IV estimates were also computed for male students at BYU. For men missionary service has a negative impact on GPA, expected median salary, and probability of being in a STEM major. On the other hand, the effect of missions for men increases the proportion of women in an individual's major, and the probability of being in a foreign language, limited enrollment, or highly meaningful major. The estimates from the basic regressions demonstrate that the impact of missionary service is almost opposite for men and women, leading to gender convergence in proportion of women in major and expected salary. Thus it is important to understand the unique experience of women.

Table 5: Basic 2SLS Regression Estimates for Impact of Mission on GPA and Major

Variable	GPA	Proportion of Female	Log of Expected Salary	STEM	Foreign Language	Limited Enrollment	Meaningful
Mission	0.336*** (0.026)	-0.222*** (0.015)	0.184*** (0.014)	0.112*** (0.016)	-0.009** (0.004)	-0.100*** (0.018)	-0.304*** (0.020)
Constant	3.140*** (0.009)	0.733*** (0.005)	11.161*** (0.005)	0.137*** (0.006)	0.014*** (0.002)	0.266*** (0.006)	0.407*** (0.007)
Sample	39,821	33,420	31,238	38,345	38,345	38,345	38,345

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; all standard errors are robust

Focusing on women for the remainder of the analysis, I add control variables for better fit. In each case the model includes ACT score and a dummy variable for international student status as control variables. Additionally, in the regressions with major characteristics as the dependent variable, average GPA was included as a control. Table 6 shows the results from these regressions, with the sample limited to female students at BYU. Serving a mission has a significant impact on GPA, proportion of women in a student's major, expected median salary, and likelihood of being in a limited enrollment or meaningful major. There is no significant difference in the likelihood of being in a STEM or foreign language major based on missionary service. The estimated relationship of the variables of interest to missionary service is consistent with the basic estimates in table 5 and the statistics in the data description.

Table 6: 2SLS Regression Estimates for Impact of Mission on GPA and Major with Control Variables

Variable	Average GPA	Proportion Female in Major	Log of Expected Salary	STEM	Foreign Language	Limited Enrollment	Meaningful
Mission	0.053** (0.025)	-0.152*** (0.014)	0.150*** (0.014)	0.009 (0.016)	-0.005 (0.004)	-0.131*** (0.018)	-0.273*** (0.020)
Average GPA	--	0.034*** (0.003)	-0.022*** (0.003)	0.024*** (0.004)	-0.000 (0.001)	0.158*** (0.003)	0.099*** (0.004)
ACT	0.049*** (0.001)	-0.015*** (0.000)	0.009*** (0.000)	0.016*** (0.001)	0.000 (0.000)	-0.004*** (0.001)	-0.014*** (0.001)
International	0.126*** (0.023)	-0.182*** (0.013)	0.117*** (0.012)	0.069*** (0.017)	-0.003 (0.004)	0.085*** (0.019)	-0.166*** (0.017)
Constant	1.934*** (0.024)	1.003*** (0.012)	11.001*** (0.012)	-0.345*** (0.016)	0.006 (0.004)	-0.131*** (0.017)	0.446*** (0.020)
R²	0.0902	--	--	0.0285	--	0.0399	--
Sample Size	37,098	31,479	29,478	36,172	36,172	36,172	36,172

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; all standard errors are robust

The regressions reported in Table 6 demonstrate that there is a systematic difference between women who serve missions and those who do not. The use of instrumental variable analysis shows that this difference goes beyond unobservable personal characteristics and at least part of it is actually due to the fact that returned missionaries were away from school for 18 months. How much does a mission or gap year experience impact students' abilities, tastes, and preferences?

One way to determine this impact is to look at the patterns of women who change major. I performed 2SLS analysis on a subset of the female student sample, which includes both returned missionaries and non-returned missionaries who changed their major once or less. For the women that did serve missions, only those who declared a major before leaving and did not switch until after returning from missionary service were included. The results, reported in table 7, show that women who go on missions are 40% more likely to switch into majors with a smaller proportion of women than those who do not serve. This is in relation to her previous major, so a returned missionary that changes to a major with less women could still be in a major with a higher proportion of women than her non-returned missionary peer. However, this finding does support the estimate that women who serve missions choose majors with a lower proportion of women.

On the other hand, the estimate for switching into a major with higher expected salary contradicts the findings in table 6. Women who go on missions are 22% less likely to switch into a higher salaried major than their non-missionary counterparts, while in general returned missionaries are in majors with higher expected salaries. These results are not inconsistent though. This means that women who serve missions generally

choose majors with a higher expected salary. However, if they happen to change major after they serve a mission they are less likely to be motivated by higher potential salary in their decision.

Table 7: 2SLS Regression Estimates for Impact of Mission on Switching Majors

Variable	Switch to a major with a smaller proportion of women	Switch to a major with a higher expected salary
Mission	0.410*** (0.015)	-0.228*** (0.012)
Average GPA	-0.058*** (0.003)	0.034*** (0.002)
ACT	-0.003*** (0.001)	0.000 (0.000)
International Student Status	0.018 (0.016)	-0.007 (0.013)
Constant	1.034*** (0.017)	0.009 (0.013)
Sample	19,057	18,255

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; all standard errors are robust

Discussion

When the literature on gap years is taken together, it is clear that a gap year before or during undergraduate education makes a significant difference academically and psychologically for students (Birch and Miller, 2007; Hoe, 2014; and Tenser, 2015). My analysis for missionary service among women at Brigham Young University largely supports previous findings. It adds to previous literature by employing an exogenous instrument to identify the true impact of time away from school on academic outcomes. While missionary service is unique compared to other types of gap year experiences, it significantly impacts the grades and major choice of female students. Instrumental variable estimation of the impact of going on a mission on average GPA shows a positive relationship. Being a returned missionary increases average GPA by about 0.05

compared to someone who does not go on a mission. This effect is smaller than the difference noted in the data description (Table 4), but could still make a difference in real terms.

Women who go on missions also have unique major choice patterns. According to my estimations, returned missionary women choose majors with about 15% less women in the total enrollment. This could be due to an increased sense of confidence, built through missionary experiences, volunteering, and living in new places. If a woman changes her major after her mission she is also 40% more likely to move to one with less women than a non-returned missionary. Those who choose to go on missions also choose majors with a 15% higher expected median salary. This difference constitutes about \$11,464 at the average for expected annual salary, which is a significant amount in terms of increased lifetime earnings. The magnitudes for the impact on limited enrollment and highly meaningful majors are also fairly large. Women who do not go on missions are 13% more likely to choose limited enrollment and 27% more likely to choose highly meaningful majors. Limited enrollment majors often take longer to finish because students must go through an application process, sometimes multiple times. Thus, it is not surprising that returned missionaries, who are already behind in school compared to their peers who did not serve missions, do not choose limited enrollment majors as often. Since the level of meaningfulness in a major is distinctly individual, there is no clear interpretation for the meaningfulness estimates. However, it is evident that returned missionaries are not looking for pre-prescribed meaning in their majors.

The estimates for the control variables are generally consistent with what is expected. It is interesting that average GPA has a negative relationship with expected

salary. This could be because some majors with a higher expected salary are more rigorous, and thus more difficult to obtain a high GPA. This relationship is contrasted with the positive correlation between GPA and limited enrollment majors, which is likely explained because GPA is one factor in admittance to competitive programs. Another surprising result is that ACT score also has a negative relationship with moving in to a major with fewer women. However this effect is small and ability is not necessarily correlated with confidence or preference for a major.

What do these findings mean for students, parents, and university administrators? For young adult students and their parents there is some amount of opportunity and financial cost to gap years, including missionary service. This time away from school delays graduation and decreases the number of years an individual can be in the workforce. Some gap years involve earning money, but most are costly. The price tag on an 18-month mission for a woman is about \$7,000 to \$9,000 depending on the amount of discretionary spending. Other gap years can be even more expensive, especially if they involve large amounts of travel. However, with an average \$11,000 higher expected annual salary for returned missionaries, these experiences have the potential to pay for themselves. And that does not taken into account additional psychological and social benefits that cannot be measured here.

For administrators in universities these findings show that the returned missionary and non-returned missionary subsets of the female population on their campuses are unique. They have different skills and preferences. It may be necessary to keep in mind these differences as administrators try to unite the student body or recruit women to specific majors. For example, women who go on missions are less likely to choose a

major that requires an application, such as majors in the Business School or college of Fine Arts and Communications. On the other hand, these women are more likely to choose majors with a smaller proportion of women. One explanation behind this finding is that they are developing more confidence, particularly when in competition with men. Studies have found that women perform more poorly in competition against men, but this difference decreases if women receive a self-confidence boost (Cotton, McIntyre, and Price 2013). Perhaps universities can harness this resource and have returned missionary women mentor others who feel a lack of confidence. Additionally, the increased probability of returned missionary women switching to majors with more men could be utilized to decrease the gap between traditionally male or female dominated majors as found in Appendix B and findings by Wiswall and Zafar (2014).

VII. Conclusion

Do missions matter? When asked any returned missionary will respond affirmatively. However, does this personal, experiential effect extend to academics? At least for women at BYU the answer is yes as well. Women who serve missions obtain higher average GPAs and have distinct major choice patterns, indicating that missions impact students' abilities and preferences. This analysis does not recommend a specific method of action, but rather demonstrates that experiences away from formal schooling have an impact on students. This is generally a positive impact when it comes to grades, but the differences in major choice are not necessarily positive or negative. They do show that returned missionaries have unique experiences that impact their choices and experiences even after they return to school.

Since missions can be viewed as a type of gap year, including travel, volunteering, and experience with new places, people, and cultures, these results can be expanded beyond BYU and returned missionaries to all women in a university setting. One of the most intriguing findings of this analysis is the potential for gap years to increase confidence among women, as evidenced by the greater likelihood to have a major with a smaller proportion of women. While research shows that women sometimes lack self-confidence or view themselves as less capable than male counterparts (Kirkwood, 2009; Pope, 2017), gap year experiences could improve confidence by having success in independent experiences. In that way gap years and missions could have a lasting impact on careers and other endeavors.

This analysis is not without drawbacks. The instrument for missionary service, the age requirement change, occurred only five years ago so the sample of students impacted by the treatment is limited. The number of treated students who have actually graduated is even smaller. With more data, analysis of the impact on graduation rates and retention can be studied. Additionally, missionary service is different from other types of gap year experiences and Brigham Young University is a religiously based institution with a relatively homogenous student body, so the results may not necessarily generalize to the broader population of college students. More nationally comprehensive data would broaden the scope of application for these findings. Future research will be able to expand understanding on the impact of missions and gap years on women's post-secondary education experience through data with both a longer time period and greater range of universities.

References

American Gap Association. "Research Statement."

<https://www.americangap.org/research.php> (accessed November 11, 2017).

—. "About." <https://www.americangap.org/about.php> (accessed November 18, 2017).

Arcidiacono, Peter, 2004. "Ability sorting and the returns to college major," *Journal of Econometrics* 121 (2004): 343-375.

Beffy, Magali, Denis Fougere, and Arnaud Maurel. "Choosing the field of study in post-secondary education : do expected earnings matter?" IZA Discussion Paper No. 4127 (April 2009): 1-37.

Birch, Elisa Rose, and Paul W. Miller. "The characteristics of 'gap-year' students and their tertiary academic outcomes." *The Economic Record* 83, no. 262 (September 2007): 329-344.

Bozick, R., & DeLuca, S. Better late than never? Delayed enrollment in the high school to college transition. *Social Forces*, 84, no. 1 (2005): 531-554.

Buchmann, Claudia, and Thomas A. DiPrete. "The growing female advantage in college completion: the role of family background and academic achievement." *American Sociological Review* 71, no. 4 (August 2006): 515-541.

Calcagno, Juan Carlos, Peter Crosta, Thomas Bailey, and Davis Jenkins. "Stepping stones to a degree: the impact of enrollment pathways and milestones on community college student outcomes." *Research in Higher Education* 48, no. 7 (November 2007): 775-801.

- Cotton, Christopher, Frank McIntyre, and Joseph Price. "Gender differences in repeated competition: Evidence from school math contests." *Journal of Economic Behavior & Organization* 86 (February 2013): 52-66.
- Denning, Jeffrey T., and Patrick Turley. "Was that SMART? Institutional financial incentives and field of study." *Journal of Human Resources* 52, no. 1 (2017): 152-186.
- Ewert, Stephanie. "Male and female pathways through four-year colleges: disruptions and sex stratifications in higher education." *American Educational Research Journal* 47, no. 4 (December 2010): 744-773.
- Gilardi, Silvia, and Chiara Guglielmetti. "University life of non-traditional students: engagement styles and impact of attrition." *The Journal of Higher Education* 82, no. 1 (January/February 2011): 33-53.
- Hoder, Randy. "Why your high school senior should take a gap year." *Time* (May 14, 2014): <http://time.com/97065/gap-year-college/> (accessed August 30, 2017).
- Hoe, Nina DePena, "Not All Types Of Delay Are Equal: Postsecondary Delay In The U.S. And Taking A Gap Year." *Publicly Accessible Penn Dissertations*, Paper 1313 (2014).
- Horn, L., E. F. Cataldi, & A. Sikora. Waiting to attend college: Undergraduates who delay their postsecondary enrollment. *Postsecondary Education Descriptive Analysis Report*. U.S. Department of Education Institute of Education Sciences NCES 2005–152.
- Kirkwood, Jodyanne. "Is a lack of self-confidence hindering women entrepreneurs?" *International Journal of Gender and Entrepreneurship* 1, no. 2 (2009): 118-

133.

Monson, Thomas S. "Welcome to Conference." *Ensign*, (November 2012): 4-5.

National Center for Education Statistics. "Fast Facts."

<https://nces.ed.gov/fastfacts/display.asp?id=372> (accessed December 1, 2017).

PayScale. "Most Meaningful College Majors." <https://www.payscale.com/college-salary-report/most-meaningful-majors?page=31> (accessed December 1, 2017).

Pope, Devin G. "Benefits of bilingualism: Evidence from Mormon missionaries."

Economics of Education Review 27 (2008): 234-242.

—. "Women who are elite mathematicians are less likely than men to believe they're elite mathematicians." *The Washington Post* (August 8, 2017): online (accessed August 12, 2017).

Stehlik, Tom. "Mind the gap: school leaver aspirations and delayed pathways to further and higher education." *Journal of Education and Work* 23, no. 4 (2010): 363-376.

Tenser, Lori Ilene. "Stepping off the conveyor belt: gap year effects on the first year college experience." Boston College Electronic Dissertation (2015).

Venezia, Andrea, and Laura Jaeger. "Transitions from high school to college." *The Future of Children* 23, no. 1 (Spring 2013): 117-136.

Wiswall, Matthew, and Basit Zafar. "Determinants of college major choice: identification using an information experiment." Federal Reserve Bank of New York Staff Report no. 500 (June 2011): 1-62.

Appendix A

Descriptive Statistics for all BYU Students, 2006-2017

Variable	Full Sample		Before Change		After Change	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Female	0.501	0.500	0.430	0.495	0.736	0.441
International Student Status	0.030	0.170	0.031	0.174	0.024	0.154
ACT	27.173	3.739	26.919	3.796	27.947	3.446
GPA	3.268	0.781	3.253	0.793	3.317	0.740
Age	21.588	2.473	22.057	2.503	20.033	1.576
Age at graduation	23.823	1.816	24.008	1.787	22.057	0.929
Served a mission	0.608	0.488	0.635	0.481	0.519	0.500
After mission policy change	0.232	0.422	-	-	-	-
Number of major changes	1.196	1.411	1.438	1.456	0.390	0.850
Sample	78,938		53,537		29,965	

Appendix B

The proportion of women in each major was computed using all students who graduated from BYU between 2006 and 2017. The gender demographics vary, with some majors containing only men or only women during the time of this sample. However, those majors are generally ones with a very low total enrollment, so they are not representative.

Major	Proportion of Female Graduates (2006-2017)
Dance Education	1
Early Childhood Education	1
Earth & Space Science Education	1
Environmental Soil Science	1
Food Industry Management	1
Plant Biology	1
Home & Family Living	0.994
Family & Consumer Sciences Education	0.986
Elementary Education	0.979
Dance	0.962
Humanities	0.956
Dietetics	0.955
Special Education	0.950
Social Work	0.949
Art History & Curatorial Studies	0.938
Nursing	0.932
Communication Disorders	0.928
Family Life	0.919
Audiology & Speech-Language	0.909

Pathology	
Marriage, Family, & Human Development	0.909
Family History - Genealogy	0.888
Theatre Arts Education K-12	0.886
School Health Education	0.885
English Language	0.88
English Teaching	0.873
Design	0.865
Bio-Agribusiness Management	0.862
Theatre Arts Education	0.862
Studio Arts	0.849
Mathematics Education	0.847
Chemistry Education	0.838
Visual Arts	0.835
Secondary Ed Without Teaching Licensure	0.833
Anthropology	0.832
History Teaching	0.825
French Teaching	0.824
Art	0.817
Biological Science Education	0.817
Art Education K-12	0.808

Exercise & Wellness	0.807
Theatre Arts Studies	0.805
Interdisciplinary Humanities	0.787
Clinical Laboratory Science	0.784
Photography	0.780
German Teaching	0.775
English	0.759
Music Education	0.714
Medical Laboratory Science	0.710
Teaching Social Science	0.705
Music Dance Theatre	0.704
Integrative Biology	0.7
Athletic Training	0.696
Conservation Biology	0.694
Public Health	0.690
Music Performance	0.687
Sociology	0.674
Physical Education Tchg/Coaching (K-12)	0.673
Illustration	0.666
Physics Teaching	0.653
Psychology	0.624
Acting	0.621
American Studies	0.612
Music	0.612
Recreation Management	0.610
Spanish Teaching	0.610
Wildlife & Wildlands Conservation	0.607
French Studies	0.599
Comparative Literature	0.598
Communications	0.593
Food Science	0.586
Latin Teaching	0.563

Biology Composite Teaching	0.556
Linguistics	0.556
Teaching Physical Science	0.553
Graphic Design	0.547
European Studies	0.540
Classical Studies	0.524
Landscape Management	0.513
French	0.508
Environmental Science	0.502
Physics--Astronomy	0.474
History	0.470
Media Music Studies	0.469
Media Arts Studies	0.468
Asian Studies	0.464
Technology & Engineering Education	0.460
Spanish Translation	0.458
Geography	0.452
Nutritional Science	0.438
Chemistry	0.427
Genetics & Biotechnology	0.413
International Relations	0.409
Animation	0.401
Political Science	0.398
Middle East Studies / Arabic	0.378
German	0.3685
Latin American Studies	0.365
Mathematics	0.361
Molecular Biology	0.360
Exercise Science	0.357
Statistics	0.353
Biology	0.352
Ancient Near Eastern Studies	0.342

Japanese	0.328
Music Composition	0.328
Physiology & Developmental Biology	0.310
Microbiology	0.307
Spanish	0.289
Biodiversity & Conservation	0.283
Bioinformatics	0.283
Biochemistry	0.280
Geology	0.276
Portuguese	0.262
Neuroscience	0.260
Philosophy	0.255
Management	0.254
Accounting	0.249
Industrial Design	0.234
Actuarial Science	0.233
Civil Engineering	0.229
Physics	0.227
Commercial Music	0.223
Italian	0.209
Sound Recording Technology	0.172
Chinese	0.170
Russian	0.168
Chemical Engineering	0.166
Biophysics	0.158
Applied Physics	0.155

Economics	0.153
Finance	0.120
Information Systems	0.120
Korean	0.102
Mechanical Engineering	0.099
Facility & Property Management	0.077
Manufacturing Engineering Technology	0.076
Computer Science	0.074
Construction and Facilities Management	0.066
Electrical Engineering	0.065
Information Technology	0.064
Construction Management	0.062
Computer Engineering	0.034
Jazz Studies	0
Scouting Education	0
Technology Teacher Education	0

Appendix C

Major meaningfulness was obtained from a representative survey of college graduates performed by PayScale.com. Graduates are asked if they “feel like their job makes the world a better place” or in other words, is meaningful.

Major	Percent Finding High Meaning
Family Life	70%
Music Education	72%
Food Science	72%
Nutrition	72%
Environmental Science	73%
Dietetics	74%
Special Education	75%
Recreation Management	75%
Exercise Science	75%
Social Work	76%
Elementary Education	76%
Early Childhood Education	76%
Geography	77%
Marriage, Family, & Human Development	77%
Athletic Training	79%
Communication Disorders	81%
Clinical Laboratory Science	81%
Mathematics Education	83%
Nursing	83%
Medical Laboratory Science	93%