

## OBJECTIVES

This project had three main objectives: 1) describe and summarize study abroad behavior for undergraduate baccalaureate degree-seeking students, 2) measure the effects (if any) of study abroad on retention rates, and 3) measure the effects (if any) of study abroad on graduation rates.

## THE DATA

The data used for this project included first-time, full-time, traditional (under 25 years of age) baccalaureate degree-seeking students who entered in fall cohorts 2010, 2011, and 2012 (N=7,455). The data was obtained from WKU Institutional Research snapped/census files for academic terms fall 2010 through summer 2018. Retention indicators and cumulative undergraduate, institutional GPA variables were created for each term within six full academic years (AYs) of students' entry term; students who died or entered into the military during that time period were excluded from the cohorts. (An academic year consists of the summer, fall, winter, and spring terms.) If the student was not enrolled for a given semester, that term GPA was left as missing. Demographic and pre-college variables such as underrepresented minority status (URM), gender (MALE), low-income status or Pell eligibility (LOW\_INCOME), first generation college student status (FIRSTGEN), high school GPA (HSGPA), and composite ACT (HI\_ACT\_COMP) score were used. In-college variables included term-specific GPAs, term-specific retention indicators, first term primary major and College, and Honors student status.

Study abroad variables were generated by identifying for-credit courses taken abroad (as indicated by an "X" campus code) at the undergraduate level by the aforementioned cohorts prior to earning a baccalaureate degree or within six AYs. Several binary study abroad variables were created – for each term and each of the nine types of study abroad (i.e. KIIS, CCSA, Faculty Led, Student Teaching, WKU Exchange, Harlaxton, Semester at Sea, other providers, and other). Variables were then created to indicate whether or not the student had studied abroad (by program and overall) by the end of their first, second, third, fourth, fifth, and sixth AY. Table 1 provides descriptive statistics for key variables in the data.

### **OBJECTIVE 1: Describe and Summarize Study Abroad Enrollment**

#### *Methods*

To describe and summarize study abroad behavior, basic crosstabs were used to look at specific subsets of students, the timing of study abroad participation within students' undergraduate tenure, and the provider(s) of study abroad courses/programs.

#### *Preliminary Analyses*

Initial crosstabs made it immediately obvious that the demographics of students participating in study abroad were not representative of the demographics of the overall cohorts. Table 2 illustrates the percentage of the combined cohorts that were Pell eligible, underrepresented minorities, first-generation college students, female, and Honors students, as well as the percentage of students who studied abroad by high school GPA. At-risk students (Pell-eligible, underrepresented minorities, and first-generation college students) were only half as likely to study abroad as their not-at-risk counterparts. Only 7% of Pell-eligible students studied abroad compared to 14% of non-Pell-eligible students. Likewise, only 6% of underrepresented minorities studied abroad compared to 12% of non-underrepresented minorities. Students with higher high school GPAs studied abroad at higher rates than

students with lower high school GPAs. Seventeen percent (17%) of students with a high school GPA of 3.50-3.99 studied abroad – compared to only 8% of students with a high school GPA of 3.00-3.49.

Given the academic requirement for WKU study abroad participation, it made sense to also look at study abroad participation rates for only high-achieving students. Table 3 illustrates study abroad participation rates for students whose WKU first term GPA was greater than 3.0. Still, the percentage of at-risk students who studied abroad was substantially lower than the percentage of non-at-risk students who studied abroad, despite the fact they both performed well academically their first term at WKU.

Tables 4, 5, and 6 illustrate study abroad enrollment by first term college, by academic year and term, and by provider and academic year, respectively. Potter College of Arts & Letters (PCAL) and Ogden College of Science & Engineering (OCSE) housed almost half the combined cohorts, based on first term major and college. PCAL had 24% of the first-time, first-year students while OCSE had 23%. However, the percentage of students within each of those colleges who studied abroad were disproportionate. Eighteen percent (18%) of PCAL students studied abroad compared to only 11% of OCSE students.

Most students studied abroad in their second (26%), third (28%), or fourth (32%) academic year. For students studying abroad in their second academic year, the spring term was most popular. For students studying abroad in their third and fourth academic years, the summer term was most popular.

Figure 1. Six-Year Grad Rates by Pell Eligibility

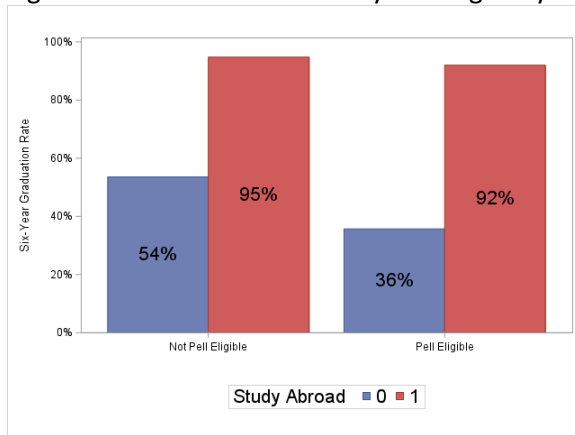


Figure 2. Six-Year Grad Rates by Race

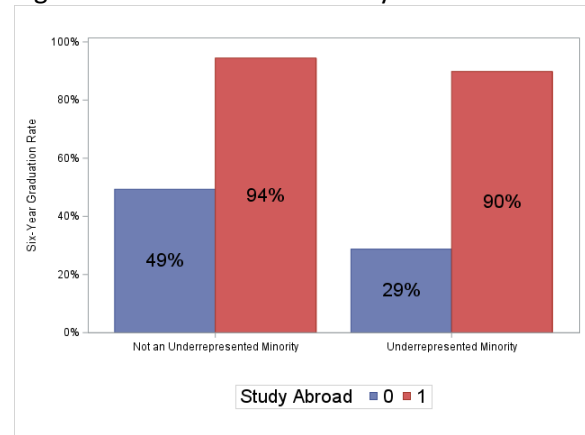
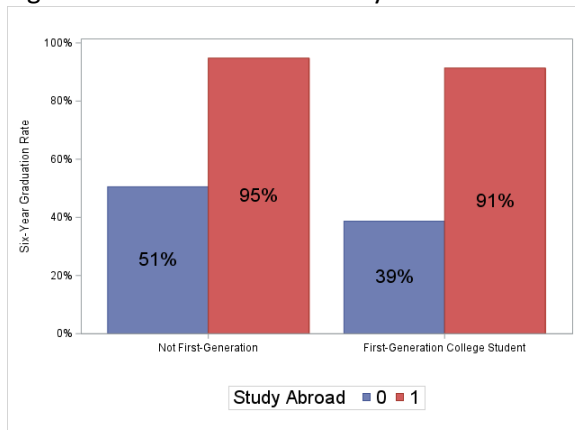


Figure 3: Six-Year Grad Rates by First Generation



### What does this tell us?

Six-year graduation rates are higher for study abroad participants than non-participants. Likewise, all study abroad participants graduate at much higher rates than non-participants, regardless of their at-risk status.

### What does that mean?

Not much yet. Because high-achieving students are the ones who study abroad, it is more likely the academic caliber of students who study abroad (rather than the study abroad experience itself) that leads to higher graduation rates. Further analyses are required.

As will be discussed more extensively in Objectives 2 and 3, there are confounding variables in these data. The same variables that predict whether or not a student studies abroad are the same variables that predict retention and graduation rates. Given that this project later aims to measure the effects of study abroad on graduation rates, basic crosstabs were first used in this data exploration phase to identify any possible correlations. Figures 1-3 illustrate the six-year graduation rates for students who study abroad vs. those who do not for key at-risk groups: Pell-eligible, underrepresented minorities, and first-generation college students. For students who *do not* study abroad, at-risk students graduate at substantially lower rates than non-at-risk students. For students who *do* study abroad, both at-risk and non-at-risk groups graduate at comparable and high rates. There appears to be a strong correlation between study abroad participation and high graduation rates but we cannot infer causation. Instead, the independent effects of each of these variables should be parsed out through additional analyses.

## **OBJECTIVE 2: Measure the Effects of Study Abroad on Retention**

### *Methods*

To compare term-to-term retention rates for study abroad participants vs. non-participants, it was necessary to examine a specific study abroad term. Data exploration revealed that the plurality of students who studied abroad did so in the summer term (39%); twenty-eight percent (28%) did so in the spring term. It is expected that summer term enrollment in general leads to higher spring-to-fall retention rates as it demonstrates continued engagement during an otherwise “off” period. For these reasons, the second, third, and fourth spring semesters were used to examine term-to-term retention. Crosstabs were used to evaluate term-to-term retention rates for study abroad participants vs. non-participants.

### *Preliminary Analyses*

Within groups of students with similar spring term GPAs, study abroad participation in the spring term did not appear to correlate with retention to the following fall term. Table 7 shows the spring-to-fall retention rates for study abroad participants vs. non-participants by spring term GPA. Within some AYs and some GPA ranges, students who studied abroad during the spring semester retained at higher rates – but this was not consistent for each AY or for each GPA range. For some groups, retention rates were lower for spring study abroad participants. Because there was no apparent correlation, no additional analyses were conducted for retention rates.

## **OBJECTIVE 3: Measure the Effects of Study Abroad on Six-Year Graduation Rates**

### *Methods*

Data exploration revealed that students who studied abroad graduated at higher rates. It also revealed that the percentage of at-risk (underrepresented minorities and low-income) students who studied abroad was not representative of those groups as a percentage of the undergraduate baccalaureate degree-seeking student population. The higher retention and graduation rates for study abroad participants were likely due to the types of students studying abroad – not the study abroad experience itself. Moreover, there are confounding variables in this data; the same variables that predict six-year graduation are also likely to predict study abroad participation. Because of this, propensity score matching was employed using a sequence of steps:

1. Using the SAS® procedure PSMATCH, a logistic regression model was fit to the original dataset and propensity scores (reflecting the probability that a student would study abroad by the end of their second AY based on race, gender, age, low-income, first-generation status, and second spring GPA) were output. By including spring GPA, students who were not retained to that term were omitted.
2. Propensity scores (the probability of a student studying abroad) were then used to restrict the data to matched “pairs” of observations who were equally as likely to have studied abroad: one who did in fact study abroad and one who did not. The result was a sample of observations, half of which studied abroad and half of which did not – both groups having similar mean values for each of the control variables.
3. Steps 1 and 2 were repeated for AY3 and AY4. Only AYs 2, 3, and 4 were examined as the majority of students who studied abroad did so within this timeframe.
4. Each new subset of data was used in a final logistic regression model to examine the independent effects of study abroad (by the end of that specific academic year) and covariates on six-year graduation rates.

Table 1 illustrates variable differences in the original dataset vs. the samples produced by propensity score matching. It should be noted that the mean six-year graduation rate for each of the three new datasets was extremely high compared to the mean six-year graduation rate in the original dataset. Again, the same variables that predict study abroad participation also predict graduation rates. Because high achieving students are typically the ones to access study abroad, it stands to reason that a control group created to have the same characteristics as study abroad participants is also going to be a high-achieving group with a high graduation rate.

Study abroad participation in and of itself requires that students still be enrolled and still be performing well academically – and basic reasoning infers that enrollment in later terms is a better predictor of graduation than enrollment in earlier terms. For example, study abroad participation in a students’ third AY would logically be a better predictor of graduation than first year participation; third year participation is a proxy for third year retention and third year academic performance. Consequently, it was necessary to 1) look at AY-specific study abroad participation (rather than study abroad participation in general) and 2) control for retention and academic performance for that same AY.

Figure 1. Logistic Regression: Effects of Covariates on Six-Year Graduation

$Y_i = \beta_0 + \beta_{1-5}X_i + \beta_6X_i + \beta_7X_i + \epsilon_i$	
DV = Intercept + Core IVs + Control IV + Study Abroad IV + Error Term	
Graduated in 6 Years	URM Gender Low Income First Gen. Honors
	AY 2 Spring Term GPA
	Study Abroad by End of AY 2

\*Model was repeated twice more, replacing *AY2 Spring Term GPA* and *Study Abroad by End of AY2* with AY3- and AY4-specific variables.

Figure 1 illustrates how the logistic regression models were built to evaluate effects on six-year graduation. This basic model was used for AYs 2-4, beginning with study abroad by the end of the *second* AY and controlling for *second* spring GPA – and ending with study abroad by end of the *fourth* AY

and controlling for *fourth* spring GPA. Spring term GPA was used in lieu of high school GPA and/or Composite ACT score as it is a more recent indicator of academic strength and is also a proxy for retention.

### *Preliminary Analyses*

Table 8 shows the results of the logistic regression models. For each academic year, the spring term GPA is by far the strongest predictor of six-year graduation; it is the only predictor variable that is statistically significant in each of the three models. Study abroad is a statistically significant indicator of six-year graduation in the second and fourth academic year. Table 9 shows the predicted probabilities of six-year graduation produced by the AY2 and AY4 logistic regression models. It should be noted that the R-squared values (representing the proportion of variance in the dependent variable explained by the independent variables) are low for each of these models: 0.13 for AY2, 0.08 for AY3, and 0.12 for AY4. In other words, between 87%-92% of the variance in graduation rates is *not* explained by these models. It should also be noted again that the predicted graduation rates are exceptionally high for these groups; these models are built on samples of high-achieving students as they are the ones to study abroad.

Students who studied abroad by the end of their second academic year had a 6% higher predicted probability of graduating in six years than non-study abroad participants, holding all other variables in the model constant. Study abroad participation by the end of the second academic year increased the predicted probability of graduating in six years for all groups. The effects of study abroad participation by the end of the second academic year were marginal for underrepresented minorities, Honors students, and for students with a spring GPA of 4.0; the effects were greatest for Pell-eligible, first-generation college students, and low- to mid-performing students:

- Pell-eligible students who studied abroad by the end of their second academic year had a 15% higher predicted probability of graduating in six years than Pell-eligible students who had not studied abroad.
- First-generation college students who studied abroad by the end of their second academic year had an 8% higher predicted probability of graduating in six years than first-generation college students who had not studied abroad.
- Non-Honors students who studied abroad by the end of their second academic year had a 14% higher predicted probability of graduating in six years than non-Honors students who had not studied abroad.
- Students with a (cumulative undergraduate institutional) second spring term GPA less than 3.5 were most impacted by AY1/AY2 study abroad participation. For study abroad participants, the predicted probability of graduating in six years was substantially higher for these groups: GPA 2.00-2.49 = 29% higher, GPA 2.50-2.99 = 22% higher, GPA 3.00-3.49 = 12% higher.

Study abroad participation by the end of the fourth academic year again had positive effects on predicted graduation rates for all groups, except Honors students on which participation had no effect. The effects of study abroad by the end of the fourth academic year were smaller, increasing the predicted probabilities of six-year graduation by only 3% for Pell-eligible students and only 1% for first-generation college students. As was the case in the AY2 model, the effects were greatest for low- to

mid-performing students: 17% higher for students with a fourth spring GPA of 2.00-2.49, and 10% higher for students with a fourth spring GPA of 2.50-2.99.

## CONCLUSION

### *Summary of Preliminary Analyses*

Students who study abroad are not representative of the WKU undergraduate student population. Study abroad students are typically female students who are not Pell eligible, not underrepresented minorities, not first-generation college students, and more than likely Honors students or students with a high school GPA of 3.0 or higher. When examining only students with a high school GPA over 3.0, at-risk and non-Honors populations are still underrepresented in study abroad enrollments.

When students do study abroad, they are most likely to do so in their second, third, or fourth academic year. If studying abroad in their second academic year, students are most likely to study abroad in the spring semester; if studying abroad in their third or fourth academic year, students are most likely to study abroad in the summer term. Students are most likely to study abroad through a Faculty Led program, an “other” program, at Harlaxton, or through KIIS.

Study abroad during the spring semester in academic years 2, 3, or 4 does not appear to correlate with higher spring-to-fall retention rates. Six-year graduation rates are considerably higher for study abroad participants than non-participants – likely due to the types of students who study abroad. Analyses using a sample of the data (containing study abroad participants and a control group of non-participants with alike characteristics) revealed that the spring term GPA is the strongest predictor of six-year graduation rates. Study abroad participation by the end of the second AY and by the end of the fourth AY are both statistically significant predictors of higher graduation rates. The effects of study abroad are strongest earlier on (by the end of AY2) and for at-risk and low- to mid-performing students.

### *Limitations & Implications*

The same variables that predict whether or not a student will study abroad are the same variables that predict retention and graduation rates. Because these are confounding variables, assessing their independent effects is difficult. In this project, study abroad participation is only a statistically significant predictor of six-year graduation when controlling only for spring GPA, race, gender, Pell-eligibility, first-generation college student, and Honors student status. Even then, only a very small percentage of variance in six-year graduation rates is predicted by these seven variables. Other key variables such as major and program requirements, student engagement, and degree progression – along with countless other social, personal, and economic variables that interplay throughout the course of six years – are other alleged predictors that were not included in these analyses. It is at least plausible that study abroad participation would not be a statistically significant predictor of six-year graduation if additional control variables were added.

Study abroad participation at WKU has been limited to primarily high-achieving students who are already likely to graduate. To that effect, this research looked to see if study abroad participation made students *already likely* to graduate even *more likely* to graduate. Results showed that study abroad participation had the greatest effect on graduation rates for at-risk and lower performing students. Additional resources should be allocated toward making study abroad more accessible for those groups.

**Table 1. Descriptive Statistics of Key Variables: Original Dataset vs. Subsets**

Variable	Original Dataset					AY2 Data Subset*					AY3 Data Subset*					AY4 Data Subset*				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
Underrepresented Minority	7,455	0.12	0.33	0	1	564	0.04	0.20	0	1	1,004	0.06	0.23	0	1	1,376	0.06	0.24	0	1
Male	7,455	0.42	0.49	0	1	564	0.27	0.45	0	1	1,004	0.25	0.44	0	1	1,376	0.26	0.44	0	1
Nontraditional (Age 25+)	7,455	0.00	0.00	0	0	564	0.00	0.00	0	0	1,004	0.00	0.00	0	0	1,376	0.00	0.00	0	0
Low-income (Pell Eligible)	7,455	0.37	0.48	0	1	564	0.18	0.38	0	1	1,004	0.21	0.41	0	1	1,376	0.23	0.42	0	1
First Generation	7,455	0.31	0.46	0	1	564	0.14	0.35	0	1	1,004	0.16	0.36	0	1	1,376	0.19	0.39	0	1
Study Abroad by End of 1st AY	7,455	0.00	0.05	0	1	564	0.04	0.19	0	1	1,004	0.02	0.14	0	1	1,376	0.01	0.11	0	1
Study Abroad by End of 2nd AY	7,455	0.04	0.19	0	1	564	0.50	0.50	0	1	1,004	0.27	0.44	0	1	1,376	0.18	0.38	0	1
Study Abroad by End of 3rd AY	7,455	0.07	0.25	0	1	564	0.53	0.50	0	1	1,004	0.50	0.50	0	1	1,376	0.33	0.47	0	1
Study Abroad by End of 4th AY	7,455	0.10	0.31	0	1	564	0.55	0.50	0	1	1,004	0.54	0.50	0	1	1,376	0.50	0.50	0	1
Study Abroad by End of 5th AY	7,455	0.11	0.32	0	1	564	0.55	0.50	0	1	1,004	0.54	0.50	0	1	1,376	0.51	0.50	0	1
Study Abroad by End of 6th AY	7,455	0.12	0.32	0	1	564	0.55	0.50	0	1	1,004	0.54	0.50	0	1	1,376	0.51	0.50	0	1
AY 1 Spring Term GPA	6,927	2.84	0.93	0	4	563	3.69	0.36	2.22	4	1,002	3.60	0.44	1.66	4	1,372	3.55	0.46	1.38	4
AY 2 Spring Term GPA	5,239	3.10	0.64	0	4	564	3.67	0.37	1.8	4	996	3.61	0.40	1.97	4	1,355	3.56	0.42	1.93	4
AY 3 Spring Term GPA	4,716	3.14	0.60	0	4	535	3.66	0.37	2.01	4	1,004	3.59	0.40	1.98	4	1,364	3.55	0.41	2.14	4
AY 4 Spring Term GPA	4,129	3.17	0.57	0	4	474	3.65	0.39	1.5	4	889	3.60	0.41	1.5	4	1,376	3.54	0.41	1.5	4
AY 5 Spring Term GPA	1,572	2.97	0.63	0	4	113	3.57	0.51	2.09	4	227	3.49	0.50	2.09	4	344	3.44	0.54	1.5	4
AY 6 Spring Term GPA	683	3.09	0.72	0.25	4	59	3.66	0.40	2.73	4	124	3.66	0.44	1.96	4	183	3.61	0.51	1.92	4
Graduated in 6 Years	7,455	0.52	0.50	0	1	564	0.90	0.30	0	1	1,004	0.94	0.23	0	1	1,376	0.95	0.21	0	1

\*Produced by propensity score matching



**Table 2. Study Abroad Participation**

	Combined Cohorts	Studied Abroad	
		No	Yes
Not Pell Eligible	4,689 63%	4,019 86%	670 14%
Pell Eligible	2,766 37%	2,566 93%	200 7%
Not Underrepresented Minority	6,526 88%	5,715 88%	811 12%
Underrepresented Minority	929 12%	870 94%	59 6%
Not First-Generation	5,116 69%	4,408 86%	708 14%
First-Generation	2,339 31%	2,177 93%	162 7%
Female	4,328 58%	3,665 85%	663 15%
Male	3,127 42%	2,920 93%	207 7%
Not Honors	6,526 88%	6,043 93%	483 7%
Honors	929 12%	542 58%	387 42%
HS GPA Unavailable	81 1%	79 98%	2 2%
HS GPA 1.00-1.49	4 0%	3 75%	1 25%
HS GPA 1.50-1.99	77 1%	75 97%	2 3%
HS GPA 2.00-2.49	390 5%	379 97%	11 3%
HS GPA 2.50-2.99	1,440 19%	1375 95%	65 5%
HS GPA 3.00-3.49	2,279 31%	2103 92%	176 8%
HS GPA 3.50-3.99	2,688 36%	2225 83%	463 17%
HS GPA 4.00	496 7%	346 70%	150 30%
<b>Total</b>	<b>7,455</b>	<b>6,585 88%</b>	<b>870 12%</b>

**Table 3. Study Abroad Participation: First Term GPA > 3.0**

	Combined Cohorts	Studied Abroad	
		No	Yes
Not Pell Eligible	2,526 70%	1,957 77%	569 23%
Pell Eligible	1,062 30%	899 85%	163 15%
Not Underrepresented Minority	3,335 93%	2,644 79%	691 21%
Underrepresented Minority	253 7%	212 84%	41 16%
Not First-Generation	2,652 74%	2,052 77%	600 23%
First-Generation	936 26%	804 86%	132 14%
Female	2,382 66%	1,811 76%	571 24%
Male	1,206 34%	1,045 87%	161 13%
Not Honors	2,726 76%	2,372 87%	354 13%
Honors	862 24%	484 56%	378 44%
<b>Total</b>	<b>3,588</b>	<b>2,856 80%</b>	<b>732 20%</b>



**Table 4. Study Abroad Participation by First Term College**

	Combined Cohorts		Studied Abroad			
	No	Yes	No	Yes		
College of Education and Behavioral Sciences	1,007	14%	898	89%	109	11%
College of Health and Human Services	1,441	19%	1,348	94%	93	6%
Exploratory Studies	803	11%	701	87%	102	13%
Gordon Ford College of Business	706	9%	646	92%	60	8%
Ogden College of Science and Engineering	1,774	24%	1,578	89%	196	11%
Potter College of Arts & Letters	1,721	23%	1,414	82%	307	18%
University College	3	0%	0	0%	3	100%
<b>Total</b>	<b>7,455</b>		<b>6,585</b>	<b>88%</b>	<b>870</b>	<b>12%</b>

**Table 5. Study Abroad Participation by Academic Year & Term**

	Combined Cohorts		Summer		Fall		Winter		Spring	
	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
AY1 (First Academic Year)	24	2%	0	0%	0	0%	13	54%	11	46%
AY2 (Second Academic Year)	284	26%	67	24%	45	16%	40	14%	132	46%
AY3 (Third Academic Year)	296	27%	118	40%	39	13%	80	27%	59	20%
AY4 (Fourth Academic Year)	337	31%	174	52%	21	6%	66	20%	76	23%
AY5 (Fifth Academic Year)	122	11%	54	44%	41	34%	7	6%	20	16%
AY6 (Sixth Academic Year)	18	2%	7	39%	6	33%	2	11%	3	17%
<b>Total</b>	<b>1,081</b>		<b>420</b>	<b>39%</b>	<b>152</b>	<b>14%</b>	<b>208</b>	<b>19%</b>	<b>301</b>	<b>28%</b>

*\*Reflects duplicated student enrollments; students are counted in each AY in which they are enrolled.*

**Table 6. Study Abroad Participation by Provider & Academic Year**

	Combined Cohorts		AY1		AY2		AY3		AY4		AY5		AY6	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
CCSA	30	3%	0	0%	4	13%	11	37%	13	43%	1	3%	1	3%
Faculty Led	375	37%	10	3%	72	19%	118	31%	153	41%	19	5%	3	1%
Harlaxton	138	14%	3	2%	110	80%	22	16%	3	2%	0	0%	0	0%
KIIS	123	12%	0	0%	24	20%	43	35%	36	29%	20	16%	0	0%
Other	235	23%	1	0%	31	13%	56	24%	104	44%	40	17%	3	1%
Other Provider	11	1%	0	0%	0	0%	0	0%	3	27%	7	64%	1	9%
Semester at Sea	16	2%	1	6%	6	38%	8	50%	0	0%	1	6%	0	0%
Student Teaching	22	2%	0	0%	0	0%	0	0%	0	0%	18	82%	4	18%
Unknown	23	2%	8	35%	9	39%	2	9%	3	13%	1	4%	0	0%
WKU Exchange	37	4%	0	0%	4	11%	21	57%	8	22%	4	11%	0	0%
<b>Total</b>	<b>1,010</b>		<b>23</b>	<b>2%</b>	<b>260</b>	<b>26%</b>	<b>281</b>	<b>28%</b>	<b>323</b>	<b>32%</b>	<b>111</b>	<b>11%</b>	<b>12</b>	<b>1%</b>

\*Reflects duplicated student enrollments; students are counted in each AY in which they are enrolled.

**Table 7. Spring to Fall Retention Rates by Spring GPA and Study Abroad Participation**

		AY2 to AY3			AY3 to AY4			AY4 to AY5		
		Spring	Retained to Fall	%	Spring	Retained to Fall	%	Spring	Retained to Fall	%
2.00-2.49	No Study Abroad	625	483	77%	505	400	79%	405	340	84%
	Studied Abroad	0	0	0%	2	2	100%	2	2	100%
2.50-2.99	No Study Abroad	1,183	1,066	90%	1,045	969	93%	981	902	92%
	Studied Abroad	2	2	100%	13	13	100%	8	7	88%
3.00-3.49	No Study Abroad	1,370	1,289	94%	1,346	1,294	96%	1,199	1,158	97%
	Studied Abroad	16	15	94%	26	24	92%	18	18	100%
3.50-3.99	No Study Abroad	1,418	1,374	97%	1,405	1,369	97%	1,214	1,195	98%
	Studied Abroad	78	75	96%	14	14	100%	38	38	100%
4.00	No Study Abroad	217	213	98%	171	169	99%	142	140	99%
	Studied Abroad	36	36	100%	4	4	100%	10	10	100%

\*No students studied abroad in AYs 2-4 with a spring semester GPA less than 2.0

**Table 8. Logistic Regression: Effects of Study Abroad on Six-Year Graduation**

Predictor Variable	AY 2			AY 3			AY 4		
	OR	CI (95%)		OR	CI(95%)		OR	CI(95%)	
Underrepresented Minority	1.16	0.29	4.66	0.95	0.35	2.61	1.26	0.47	3.38
Male	1.01	0.52	1.98	0.92	0.49	1.73	1.08	0.56	2.08
Low-Income (Pell Eligible)	0.60	0.30	1.22	0.92	0.47	1.82	0.44 *	0.23	0.83
First Generation	1.09	0.49	2.39	0.69	0.35	1.40	1.12	0.56	2.25
Honors	3.70 ***	1.82	7.52	1.31	0.61	2.84	1.77	0.71	4.45
Study Abroad by End of AY	2.29 **	1.22	4.32	1.53	0.85	2.73	1.88 *	1.02	3.48
AY Spring Term GPA	5.19 ***	2.35	11.50	10.30 ***	5.19	20.45	29.39 ***	14.23	60.72
Constant	0.01 **			0.01 ***			0.00 ***		
Pseudo R-Square	0.13			0.08			0.12		
-2 Log Likelihood	369.32			437.73			505.54		
N (sample size of model)	564			1,004			1,376		

Significance: \* p < .05    \*\* p < .01    \*\*\* p < .001

**Table 9. Logistic Regression: Predicted Probabilities of Six-Year Graduation**

	Study Abroad by End of AY2				Study Abroad by End of AY4			
	#	No	Yes	Diff.	#	No	Yes	Diff.
<b>Overall</b>	564	0.87	0.93	6%	1,376	0.95	0.96	1%
Not Underrepresented Minority	540	0.87	0.93	6%	1,295	0.95	0.97	2%
Underrepresented Minority	24	0.87	0.88	1%	81	0.90	0.93	3%
Female	410	0.88	0.94	6%	1,020	0.95	0.97	2%
Male	154	0.84	0.89	5%	356	0.93	0.95	2%
Not Low-Income	463	0.90	0.94	4%	1,056	0.96	0.98	2%
Low-Income (Pell Eligible)	101	0.73	0.88	15%	320	0.89	0.92	3%
Not First Generation	483	0.88	0.94	6%	1,113	0.95	0.97	2%
First Generation College Student	81	0.81	0.89	8%	263	0.93	0.94	1%
Not Honors	166	0.68	0.82	14%	699	0.91	0.94	3%
Honors	398	0.95	0.97	2%	677	0.99	0.99	0%
Spring GPA 1.50-1.99	1	0.00	0.67	N/A	2	0.00	0.16	N/A
Spring GPA 2.00-2.49	4	0.27	0.56	29%	30	0.36	0.53	17%
Spring GPA 2.50-2.99	38	0.49	0.71	22%	137	0.77	0.87	10%
Spring GPA 3.00-3.49	83	0.74	0.86	12%	312	0.95	0.97	2%
Spring GPA 3.50-3.99	326	0.92	0.96	4%	764	0.99	0.99	0%
Spring GPA 4.0	112	0.96	0.98	2%	131	1.00	1.00	0%

AY2 N = 564, AY4 N=1,376



*INSTITUTIONAL REVIEW BOARD  
OFFICE OF RESEARCH INTEGRITY*

DATE: January 28, 2019

TO: Angela Byrd, MA  
FROM: Western Kentucky University (WKU) IRB

PROJECT TITLE: [1381954-1] Examining Effects of Study Abroad on Retention & Graduation Rates

REFERENCE #: IRB 19-241  
SUBMISSION TYPE: New Project

ACTION: APPROVED  
APPROVAL DATE: January 28, 2019

REVIEW TYPE: Exempt from Full Board Review

Thank you for your submission of New Project materials for this project using pre-existing data. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt from Full Board Review based on the applicable federal regulation.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a MINIMAL RISK project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Robin Pyles at (270) 745-3360 or [irb@wku.edu](mailto:irb@wku.edu). Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Western Kentucky University (WKU) IRB's records.