

# Agricultural Education and Migration: The Cases of El Salvador and Honduras

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## Abstract

Youth is defined as a period of transition from childhood to adulthood that ranges between the ages of 15 and 24, and it is the most mobile social group in the world. Youth migration in El Salvador and Honduras is a well-known problem; however, limited research has focused on the causes of migration and the impact of agricultural education programs on the decision to migrate. This study aims to identify and compare students' migration intentions in agricultural and non-agricultural programs of two rural communities of El Salvador and Honduras. For this quantitative study, a two-group model was used; the target population ( $N = 209$ ) was composed of high school students with similar socioeconomic characteristics. Overall, the comparison between El Salvador and Honduras showed a significant difference between countries regarding their migration intentions ( $p < 0.05$ ). Salvadorian students presented a stronger willingness to migrate. Moreover, students' intention of migration was evaluated based on their educational background. Youth who were not part of a formal agricultural program have a higher intention of migrating ( $p < 0.05$ ). Finally, the main and interaction effects of intention to migrate, country of origin, and academic program based on the different migration drivers were analyzed.

## Keywords

Youth migration, agricultural education programs, El Salvador, Honduras, rural

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## Introduction and Problem Statement

According to the United Nations (UN, 2019), youth is defined as a period of transition from the dependence of childhood to adulthood's independence that ranges from 15 and 24 years old. It is expected that by 2030, the number of youth will grow from 1.2 billion to nearly 1.3 billion globally. Moreover, this age group is the most mobile social group in the world (Global Migration Group, 2014). This growth and mobility add pressure to governments because of the need to provide youth with the necessary services (UN, 2018). For instance, approximately 47% of Salvadorans and 52% of Hondurans are under the age of 25, and most of them are unemployed with little opportunity for gainful employment, forcing them to seek other options to make a living, such as migration (Congressional Research Service, 2019).

In 2015, the number of international migrants reached 244 million; this number is small compared to the noticeably higher number of migrants (740 million) who move inside their countries, mainly from rural to urban areas or from one rural area to another (Food and Agriculture Organization [FAO], 2016). The decision to stay in their home communities or migrate to other areas holds great economic, social, and emotional consequences, especially for rural students (Theodori & Theodori, 2014). The impact of youth's decision to migrate is important for rural communities because of the potential loss of labor force, community leaders, volunteers, and parents of future generations (Demi et al., 2009).

Youth migration in El Salvador and Honduras is a recognized problem, and several reasons such as poverty, violence, insecurity, and family reunification in the cities have been identified as potential drivers of this phenomenon (Warren & Kerwin, 2017). Education is often a driver of rural-to-urban migration; rural people who want to pursue a higher education level are more willing to leave their communities to seek educational opportunities (Corbettm, 2007; Kodzycki, 2001). However, this is not the case with all the educational programs. Agricultural education programs teach students better agricultural practices and motivate them to replicate new techniques on their lands, which can reduce migration (Rhoda, 1983). Youth migration is a subject of significance in these countries; unfortunately, limited studies have been developed in Central America to determine the impact of agricultural education programs on the decision to migrate (Roth & Hartnett, 2018).

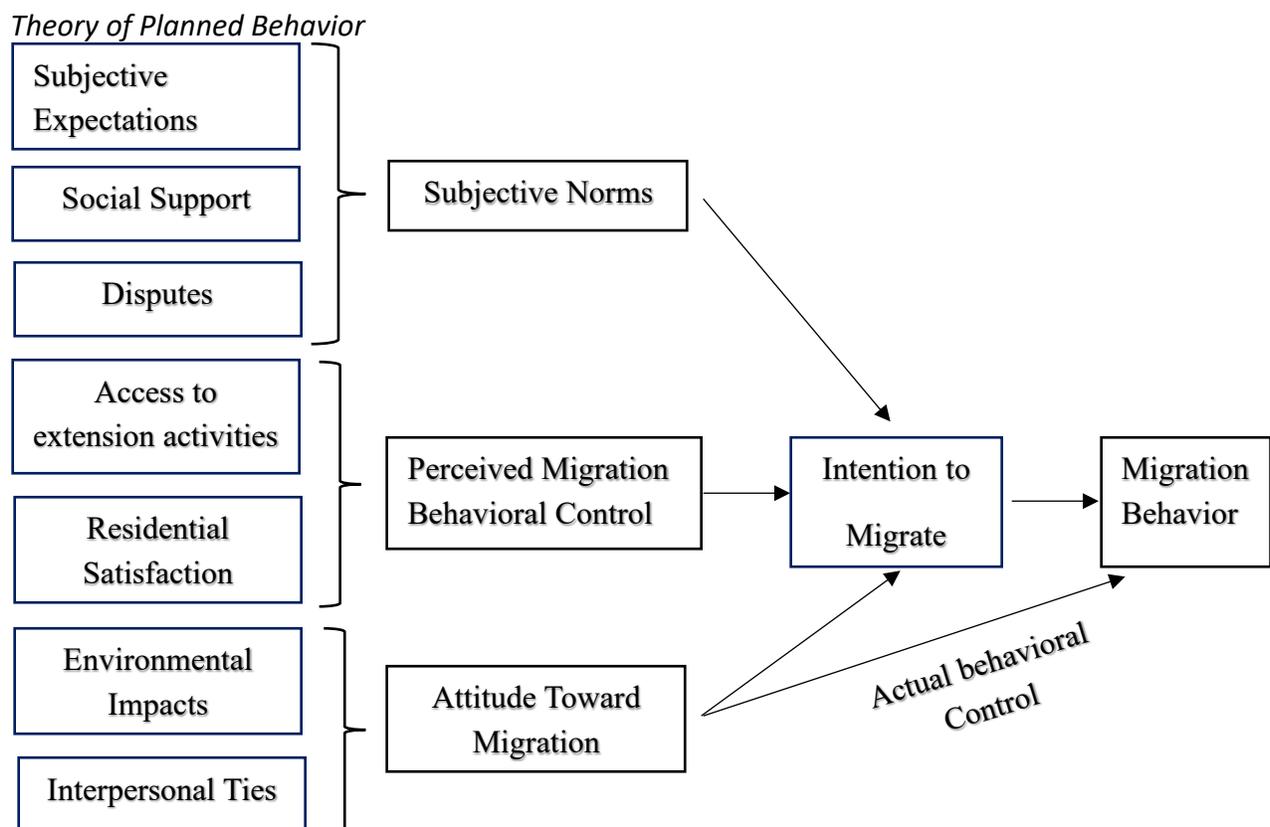
## Theoretical and Conceptual Framework

The Theory of Planned Behavior (TPB) by Ajzen (1991) was used to guide this study. The TPB aims to predict behavioral intention based on three primary constructs: attitude toward the behavior, subjective norms, and perceived behavioral control. The first construct of the theory is the attitude toward the behavior, which is the favorable or unfavorable evaluation of a given behavior. The second construct is subjective norms that are social pressure to execute or not execute a given behavior. Perceived behavioral control is the third construct and refers to people's perception of the ease or difficulty of performing the behavior of interest. The combination of the three constructs allows predicting future intentions (Ajzen, 1991).

Although the TPB has been recognized for its facility of predicting behavior, the theory continues to evolve, and other variables might increase the model's utility (Burton, 2004; Whitmarsh & O'Neill, 2010). Ajzen (1991, p.179) argued the following regarding adaptations "in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variation in intention or behavior." Therefore, for this study, the migration drivers were selected using previous literature and research experience, and it has been designed to match with the TPB (Castelli, 2018; Foroughi et al., 2001; Ramos-Vidal et al., 2019; Yazdan-Panah et al., 2017; Yazdan-Panah & Zobeidi, 2017).

Thus, subjective norms, the ideas that other community members have regarding migration, are composed of Subjective Expectations, Interpersonal Ties, Social Support, and Disputes. The perceived migration behavioral control, the perceived level of difficulty regarding migration, was composed of Access to Extension Activities and Residential Satisfaction. The attitude toward migration, the positive or negative idea of migration, comprises environmental impacts (Ajzen, 1985; Yazdan-Panah et al., 2017). Figure 1 shows how selected migration drivers were added to TPB variables.

**Figure 1**



*Note.* This figure shows the relationship that each component has with the predictable behavior. Adapted from the study (Ajzen, 1991)

## Purpose

The study aims to identify and compare the migration intentions of high school students in agricultural and non-agricultural programs from two rural communities, one from El Salvador and one from Honduras. The following objectives guided the study:

1. Compare students' intention to migrate by country of origin.
2. Compare students' intention to migrate by academic program.
3. Determine the main and interaction effects of intention to migrate, country of origin, and academic program based on the different migration drivers.
4. Calculate the results managing missing data with two techniques, pairwise deletion and mean imputation.

## Methods

For this quantitative study, a two-group model was used. The target population ( $N = 209$ ) was composed of high school students with similar economic and social characteristics from two communities, Chalatenango, El Salvador ( $n = 104$ ), and Jesus de Otoro, Honduras ( $n = 105$ ). Two groups from each community were recruited, one group participated in a formal Agricultural Education Program (AEP), and the other group was part of a Non-Agricultural Education Program (Non-AEP).

Data were collected using a paper-pencil instrument that explored Salvadorian and Honduran youth's intention to migrate. The survey had five sections and 50 questions: demographic information, participants' academic and agricultural background, migration drivers, residential satisfaction, and intention to migrate. For the "Migration Drivers" section, 34 5-point Likert-type questions were created by the researchers, ranging from 1 (completely disagree), 2 (Disagree), 3 (Neither Agree nor Disagree), 4 (Agree), 5 (completely agree). Scales containing multiple items were developed to measure the following migration drivers: social participation, social support, access to extension activities, environmental impacts, interpersonal ties, disputes, residential satisfaction, and subjective expectations (Ajzen, 1985 & Yazdan-Panah et al., 2017). The drivers were selected based on previous literature and under experts' criteria (Castelli, 2018; Foughi et al., 2001; Ramos-Vidal et al., 2019; Yazdan-Panah et al., 2017).

The instrument was pilot tested to determine its reliability and validity. A panel of experts confirmed the questionnaire's face validity and field-tested in a pilot study that included 20 young people from both countries. Cronbach's alpha was calculated to measure constructs' reliabilities. For social participation, the reliability was .74, social support .73, access to extension activities .89, environmental impact .75, interpersonal ties .74, disputes .77, residential satisfaction .73, and subjective expectations .73. Results ranged from .73 to .89, which means that they were acceptable (Rubin & Babbie, 2009).

The surveys with more than 10% of missing values (six surveys) were deleted from the data analysis (Raaijmakers, 1999). Missing values were between 2 and 8% for each Likert-type per statement. Therefore, data analyses were conducted independently, first using the Pairwise Deletion Technique (PDT) and then using Mean Imputation Technique (MIT) for the missing data. The PDT is used in missing data that are independent and all the missing cases to be used in the analysis (Field, 2013, p.231; Shi et al., 2020). The MIT allows using the mean value of the variable in place of the missing data point. Field (2013, p.231) suggested replacing the missing score with the average score when there is a large sample and a small number of missing values.

The data collected were analyzed based on the objectives. Descriptive statistics were used to understand the participants of the study. Different independent chi-square was conducted to compare migration intention depending on the country of origin and academic program. Finally, a 2 x 3 x 2 Factorial Multiple Analysis of Variance (MANOVA) was conducted to examine the main effects and interactions effects of independent variables of country of origin ("El Salvador" vs. "Honduras"), academic program ("AEP" vs. "Non-AEP"), and intention to migrate ("Yes" vs "I don't know" vs "No") on migration drivers, including Social Participation, Access to Extension Activities, Social Support, Interpersonal Ties, Disputes, Subjective Expectations, Environmental Impacts, and Residential Satisfaction.

## Findings

The study aimed to identify and compare the migration intentions of high school students in agricultural and non-agricultural programs from El Salvador and Honduras. The sample consisted of 104 youth in AEP and 105 in a Non-AEP. In El Salvador, more participants were from AEP ( $n = 54$ , 51.92%), than Non-AEP ( $n = 50$ , 48.08%) programs. On the other hand, in Honduras, more participants were in a Non-AEP ( $n = 55$ , 52.38%) than an AEP ( $n = 50$ , 47.62%) program.

In total, 106 males and 103 females participated in this study. In El Salvador, the majority of participants were male ( $n = 65$ , 62.50%), while in Honduras, most of the participants were female ( $n = 64$ , 61.95%). One hundred and twenty-three participants considered the father as the family head, and 86 considered the mother as the family head. In El Salvador, the majority considered men as the family head ( $n = 71$ , 68.27%), whereas in Honduras, women were considered the family head ( $n = 53$ , 50.48%). Concerning students' access to land, Honduras had a greater number of students from families that own land ( $n = 78$ , 74.29%) than the participants from El Salvador ( $n = 39$ , 37.50%). Table 1 shows the general and specific distribution by academic program, gender, family head, and access to land.

**Table 1**

*Summary of Sociodemographic information*

Characteristics	Total (N = 209)		El Salvador (n = 104)		Honduras (n = 105)	
	f	%	f	%	f	%
Academic Program						
AEP	104	49.76	54	51.92	50	47.62
Non-AEP	105	50.24	50	48.08	55	52.38
Gender						
Male	106	50.72	65	62.50	41	39.05
Female	103	49.28	39	37.50	64	61.95
Family Head						
Male	123	58.85	71	68.27	52	49.52
Female	86	41.15	33	31.73	53	50.48
Access to Land						
Landowners	117	55.98	39	37.50	78	74.29
Non-Landowners	87	41.63	65	62.50	22	20.95
Prefer not to say	5	2.39			5	4.76

To answer objective one, a Chi-Square test of independence was calculated comparing the intention to migrate (yes = 1, I do not know = 2, and no = 3) and country of origin ("El Salvador," and "Honduras"). Table 2 shows the results of PDT and MIT methods. Results were the same and showed a significant relationship between intention to migrate and country of origin ( $\chi^2(2) = 17.77, p < .001$ ). In total, 206 youth participated in the intention to migrate section. Overall, 56.73% of Salvadorian youth considered migration as an option, while 25.96% said No, and 17.30% were undecided. In Honduras, 36.27% of the youth have no intention to migrate, followed by 35.29% undecided, and 28.43% have the intention to migrate. Cramer's Value was used to determine the association's strength; results showed a value of .29, considered as medium effect size (Cohen, 1988).

**Table 2**

*Chi-Square Results for Intention to Migrate Based on Country of Origin (N = 206)*

Intention to migrate	El Salvador (n=104)		Honduras (n = 102)		$\chi^2(2)$	Cramer's V
	n	%	n	%		
Yes	59	56.73	29	28.43	17.77*	.29
I don't know	18	17.30	36	35.29		
No	27	25.96	37	36.27		

Note. \* $p < .05$

For objective two, a Chi-Square test of independence was calculated comparing the intention to migrate (Yes = 1, I don't know = 2, and No = 3) and academic program ("AEP," and "Non-AEP"). Table 3 shows the results of the Chi-square using PDT and MIT. Results show a significant

relationship between intention to migrate and academic program ( $\chi^2 (2) = 27.67, p < .001$ ). Overall, 39.81% of the youth in the agricultural program do not have the intention to migrate, while 30.10% said yes, and 30.10% were undecided; 55.34% of students in Non-AEP considered migration as a good option, followed by 23.33% undecided, and 23.33% do not have the intention to migrate. The Cramer's Value for the strength of the association was .37, considered a medium effect size (Cohen, 1988).

**Table 3**

*Chi-Square Results for Intention to Migrate Based on Academic Program (N = 206)*

Intention to migrate	AEP (n =104)		Non-AEP (n = 102)		$\chi^2 (2)$	Cramer's V
	n	%	n	%		
Yes	26	25.00	62	60.80	27.67*	.37
I don't know	38	36.50	16	15.70		
No	40	38.50	24	23.50		

Note. \* $p < .05$

For objective three, a 2 x 3 x 2 Factorial MANOVA was conducted to examine the main effects and interactions effects of independent variables of the country of origin ("El Salvador" vs. "Honduras"), academic program ("AEP" vs. "Non-AEP"), and Intention to migrate ("Yes" vs. "I don't know" vs. "No") have on the migration drivers, including Social Participation, Access to Extension Activities, Social Support, Interpersonal Ties, Disputes, Subjective Expectations, Environmental Impacts, and Residential Satisfaction.

The assumption of normality was met because skewness and kurtosis levels were in the range of +/- 2, and a histogram showed a normal distribution. According to Levene's test, the homogeneity of variance was not accomplished in the study. Therefore, Pillai's Trace was used to interpret the results to guarantee the robustness of the findings, despite the assumption violation. Finally, the homogeneity of variance was calculated using Box's test. Results show a Box's M value of 349.24 with a  $p$ -value of .03 for PDT and a Box's M value of 469.56 with a  $p$ -value of 0.04 for MIT, which represents a violation of the assumption. However, Field (2013) argues that Box's test findings are sensitive to large sample sizes, and the significant value could be the result of the sample.

Table 4 shows the results of the sources that were significant. For intention to migrate, and using PDT, there was a significant medium effect,  $V = .26, F(16,270) = 2.47, p = .02$ , partial  $\eta^2 = .13$ ; for MIT there was reported a significant small effect,  $V = .19, F(16,354) = 2.29, p = .03$ , partial  $\eta^2 = .09$ . Using PDT and MIT, a significant medium effect was found on country of origin,  $V = .28, F(8,134) = 6.44, p < .001$ , partial  $\eta^2 = .28$ ;  $V = .21, F(8,176) = 5.76, p < .001$ , partial  $\eta^2 = .21$ ). For Academic program, a significant large effect was found for both methods, PDT,  $V = .49, F(8,134) = 16.09, p < .001$ , partial  $\eta^2 = .49$ , and MIT,  $V = .45, F(8,176) = 18.38, p < .001$ , partial  $\eta^2 = .46$ . Finally, for the interaction country of origin and academic program a significant medium effect size was found, using PDT,  $V = .32, F(8,134) = 7.93, p < .001$ , partial  $\eta^2 = .32$ , and MIT,  $V = .27, F(8,176) = 8.15, p < .001$ , partial  $\eta^2 = .27$  (Cohen, 1988).

**Table 4***Multivariate Analysis of Variance for Migration Intentions*

Source	Method					
	PDT			MIT		
	<i>F</i>	<i>p</i>	partial $\eta^2$	<i>F</i>	<i>p</i>	partial $\eta^2$
Academic Program (1)	16.09	< .001*	.49	18.38	< .001*	.46
Country of Origin (2)	6.44	< .001*	.28	5.76	< .001*	.21
Intention to Migrate (3)	2.47	.02*	.13	2.29	.03*	.09
Interaction 1 x 2	7.93	< .001*	.32	8.15	< .001*	.27
Interaction 1 x 3	1.35	.16	.07	1.05	.40	.05
Interaction 2 x 3	.85	.62	.48	1.02	.43	.04
Interaction 1 x 2 x 3	.89	.52	.50	1.26	.26	.05

*Note.* \* $p < .05$ ; PDT = Pairwise Deletion Technique; MIT = Mean Imputation Technique

As complementary tests for the significant MANOVA, univariate Analysis of Variance (ANOVAs) were implemented to understand the interaction effects of the independent variables on the eight migration drivers. Therefore, the ANOVA revealed a significant main effect for country of origin, PDT,  $F(1,141) = 9.97$ ,  $p = .01$ , partial  $\eta^2 = .06$ ; MIT,  $F(1,183) = 9.34$ ,  $p = .01$ , partial  $\eta^2 = .05$ , on the migration driver, "Social Participation."

For the Access to Extension Activities construct, the ANOVAs revealed a significant effect, for country of origin, PDT,  $F(1,141) = 10.20$ ,  $p = .01$ , partial  $\eta^2 = .07$ ; MIT,  $F(1,183) = 10.93$ ,  $p = .01$ , partial  $\eta^2 = .06$ , and academic program, PDT,  $F(1,141) = 89.82$ ,  $p < .001$ , partial  $\eta^2 = .39$ , and MIT,  $F(1,183) = 83.18$ ,  $p < .001$ , partial  $\eta^2 = .31$ . Besides, it was found a significant effect in the interaction of country of origin and academic program using PDT,  $F(1,141) = 4.67$ ,  $p = .03$ , partial  $\eta^2 = .03$ ; MIT,  $F(1,183) = 3.21$ ,  $p = .07$ , partial  $\eta^2 = .01$ .

For the Social Support construct, a significant effect was observed in country of origin, PDT,  $F(1,141) = 15.57$ ,  $p < .001$ , partial  $\eta^2 = .10$ ; MIT,  $F(1,183) = 16.91$ ,  $p < .001$ , partial  $\eta^2 = .09$ . Interpersonal Ties construct had a significant effect for country of origin, using the PDT,  $F(1,141) = 6.65$ ,  $p = .01$ , partial  $\eta^2 = .05$ ; MIT,  $F(1,183) = 6.25$ ,  $p = .01$ , partial  $\eta^2 = .03$ . Moreover, it was found a significant effect for intention to migrate, using MIT,  $F(2,183) = 3.40$ ,  $p = .03$ , partial  $\eta^2 = .04$ ; but not found significant effect for PDT,  $F(2,141) = 2.38$ ,  $p = .09$ , partial  $\eta^2 = .03$ .

For the Dispute construct, a significant effect was found for academic program, PDT,  $F(1,141) = 42.85$ ,  $p < .001$ , partial  $\eta^2 = .23$ ; MIT,  $F(1,183) = 34.64$ ,  $p < .001$ , partial  $\eta^2 = .16$ , and the interaction between of country of origin and academic program, PDF,  $F(1,141) = 37.26$ ,  $p < .001$ , partial  $\eta^2 = .21$ ; MIT,  $F(1,183) = 35.30$ ,  $p < .001$ , partial  $\eta^2 = .16$ . Country of origin was significant only using the PDT method,  $F(1,141) = 11.67$ ,  $p = .01$ , partial  $\eta^2 = .08$ , MIT,  $F(1,183) = 3.50$ ,  $p = .06$ , partial  $\eta^2 = .02$ . Finally, for Environmental Impacts construct, ANOVAs revealed a significant effect on intention to migrate, PDT,  $F(2,141) = 7.35$ ,  $p = .01$ , partial  $\eta^2 = .09$ , and MIT,

$F(2,183) = 8.16, p < .001, \text{partial } \eta^2 = .08$ . Table 5 summarizes the ANOVAs that are significant, depending on each migration driver, and using the two processes to manage missing data.

**Table 5**

*Univariate Analysis of Variance for Social Participation, Access to Extension Activities, Social Support, Interpersonal Ties, Disputes, and Environmental Impacts as a Function of Main and Interaction Effects of the Intention to Migrate, Country of Origin, Academic Program*

Source	Method					
	PDT			MIT		
	<i>F</i>	<i>p</i>	partial $\eta^2$	<i>F</i>	<i>p</i>	partial $\eta^2$
	Social Participation					
Country of Origin (2)	9.97	.01*	.06	9.34	.01*	0.5
	Access to Extension Activities					
Country of Origin	10.20	.01*	.07	10.93	.01*	.06
Academic Program (1)	89.82	< .001*	.39	83.18	< .001*	.31
Interaction 1 x 2	4.67	.03*	.03	3.21	.07	.01
	Social Support					
Country of Origin	15.57	< .001*	.10	16.91	< .001*	.09
	Interpersonal Ties					
Country of origin	6.65	.01*	.05	6.25	.01*	.03
Intention to migrate (3)	2.38	.09	.03	3.40	.03*	.04
	Disputes					
Academic Program	42.85	< .001*	.23	34.64	< .001*	.16
Country of Origin	11.67	.01*	.08	3.50	.06	.02
Interaction 1 x 2	37.26	< .001*	.21	35.30	< .001*	.16
	Environmental Impact					
Intention to migrate	7.35	.01*	.09	8.16	< .001*	.08

*Note.* \* $p < .05$ ; PDT = Pairwise Detention Technique; MIT = Mean Imputation Technique; the variables Subjective Expectations and Residential Satisfaction was not significant for any source.

Post-hoc test was conducted for the intention to migrate variable because it was the only independent variable that had more than two levels. The researchers assumed that the sample sizes per condition were equal; therefore, the Bonferroni was implemented; this test is well-known for being conservative and has strong statistical power (Field, 2011, p.374). Table 6 shows the Post-hoc test used as a follow-up test to determine the differences between the means of intention to migrate. Findings from the PDT shows that for the construct of Environmental Impacts, the migration option “I don’t know” ( $M = 3.21, SD = .77$ ) received a higher score than the migration options “No” ( $M = 2.69, SD = .77$ ) and “Yes” ( $M = 2.60, SD = 0.61$ ). For the MIT, the results were similar for the construct, the migration option “I don’t know” ( $M = 3.23, SD = .84$ ) received a higher score than the migration options “Yes” ( $M = 2.72, SD = 0.70$ ) and “No” ( $M = 2.70, SD = .78$ ). ANOVA result using MIT, showed significance on the Ties construct; however, further analysis did not confirm the previous results.

## Conclusions, Discussion, and Recommendations

Results of this research study are supported by previous studies that established an increased willingness to migrate from Salvadorian youth than Honduran youth (Congressional Research Service, 2019; Rodriguez et al., 2019). The comparison of youth from AEP and Non-AEP showed that investing in agricultural education programs reduces youth's intention to migrate. These results match with findings from Rhoda (1983), whose research indicated that agricultural program interventions might reduce migration intentions.

The 17 % of Salvadorian and 35 % of Honduras youth are indecisive about migrating. Since this group is still undecided, the TPB suggests that this group's members can be influenced in one direction or the other. As such, it would be beneficial for programs to increase youth's involvement in community activities to increase their sense of belonging and social participation.

The perception of the environment was significantly different in the intention to migrate variable and Bonferroni post-hoc confirmed the results. Consequently, future studies should explore the effect that the perception of the environment has on youth intentions to migrate and explore if other variables can affect this interaction.

Furthermore, future studies could examine young people's perspectives in agricultural and other technical education programs in rural areas in other countries to create country profiles for rural agricultural education. Understanding the young people's ideas of their opportunities at home in agriculture and other areas will be important in rural development initiatives.

Future research exploring rural youth's intention to migrate should examine the youth migration issue in more depth. Ethnographic qualitative studies would shed much needed light on the migration intentions of youth. Additional studies could be developed evaluating youth in other countries and the impact that other variables have on migration intention, such as access to inputs. Replicating this study in other regions besides El Salvador and Honduras could also strengthen the results and provide more robust data.

It is important to evaluate the pros and cons of using different missing data techniques. For this study, the use of PDT and MIT displayed the same result for the Chi-square; however, ANOVA results, were different based on the missing data technique used demonstrating that results can be influenced, and as a result, the interpretation of the analysis can be influenced. Therefore, it is important to report the method used to manage missing data.

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