Evans School of Public Affairs
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**LSMS – Integrated Surveys on Agriculture**
**United Republic of Tanzania:**
**Household Characteristics & Education**

EPAR Request No. 160

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*Prepared for the Agricultural Policy Team of the Bill & Melinda Gates Foundation*

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## SECTION C: Household Characteristics and Education

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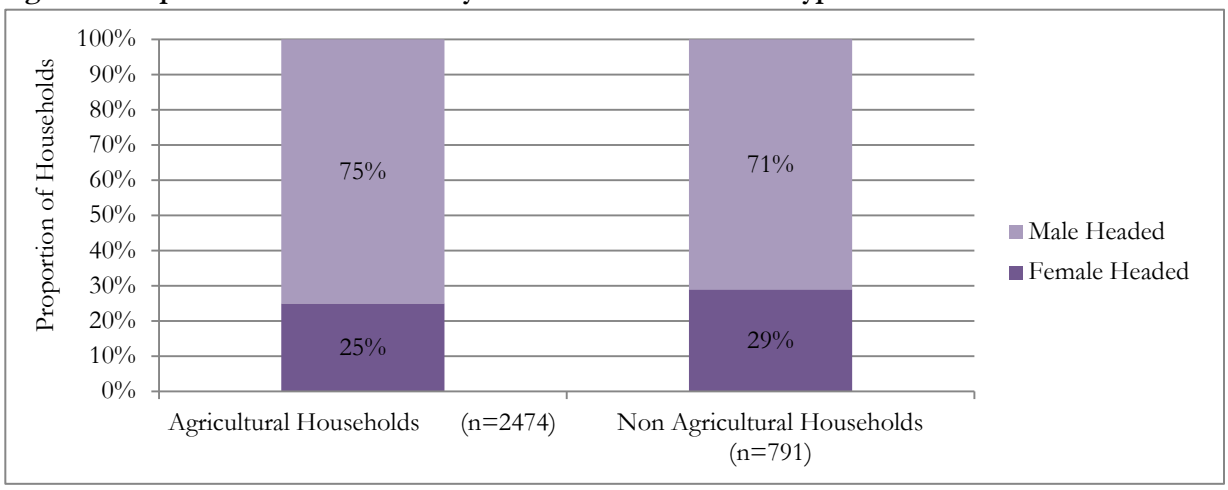
## Section Highlights

- Females are more likely to head non-agricultural households (29%) compared to agricultural households (25%).
- Agricultural households are larger (5.4 individuals) on average than non-agricultural households (3.9).
- Agricultural households contain more children on average (3) than do non-agricultural households (2).
- Adult males in agricultural households were significantly less likely to have attended any school (17%) than those in non-agricultural households (3%).
- 35% of women in agricultural households have not attended school, as compared to 9% in non-agricultural households.
- Adult males in agricultural households completed, on average, 6 years of education compared to 4.7 of adult females in agricultural households.
- An estimated 89% of all school-aged boys and girls living in agricultural households were enrolled in school.

## Household: Basic Characteristics of Household Heads

*Figure 1* illustrates the proportion of agricultural and non-agricultural households in the LSMS survey that are male- or female-headed. As shown below, females are more likely to head non-agricultural households compared to agricultural households.[1] As a region, Dar es Salaam has the highest total number of female-headed households regardless of household category (n=141, 17%). Mtwara has the second highest number of female-headed agricultural households (n=61, 10%) followed by Mbeya (n=51, 9%).

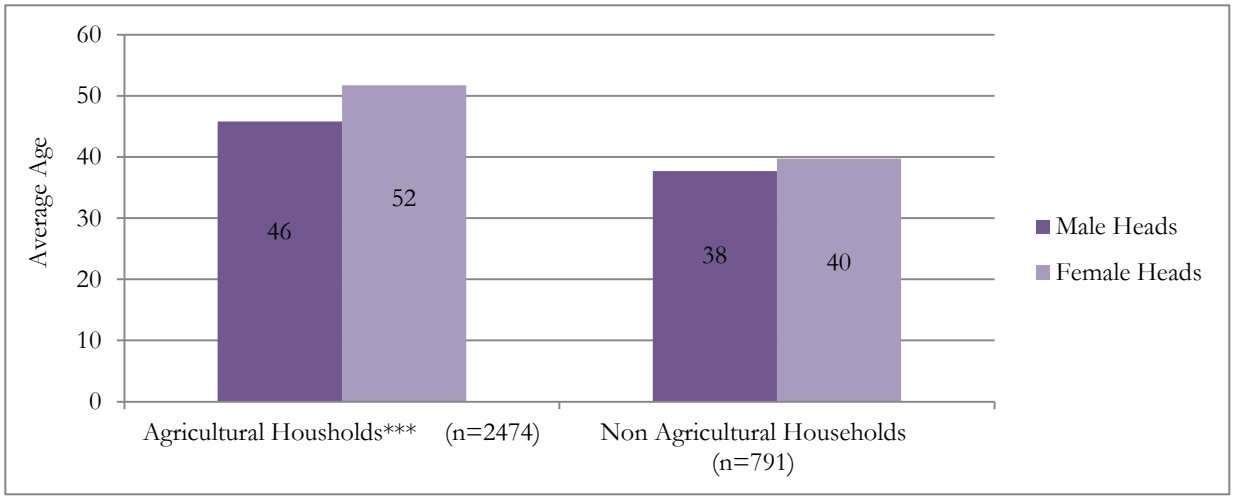
***Figure 1:*** **Proportion of Households by Gender and Household Type**




*Questions sbq2, sbq5, stq1 through stq7*

On average, female heads are older than male heads as shown in *Figure 2*. The age differences between male- and female-headed households are statistically significant in agricultural households in the sample, but not among non-agricultural households.

***Figure 2:*** **Average Age of Household Head by Gender and Household Type**




****Statistically significant at the .01 level*

*Questions sbq2, sbq4, sbq5, stq1 through stq7*

[1] Statistically significant at the .10 level, p>0.053

When not controlling for the gender, non-agricultural household heads are significantly younger than agricultural household heads.[2] *Appendix A* provides additional data on the proportion of households that are either male- or female-headed, and differences in average age of household head.

The average number of individuals living within agricultural households (5.4) is significantly larger than the average number of individuals living in non-agricultural households (3.9). Male-headed households are significantly larger than female-headed households, which may simply reflect the missing male head. *Table 1* provides estimates for mean household size across agricultural and non-agricultural households.

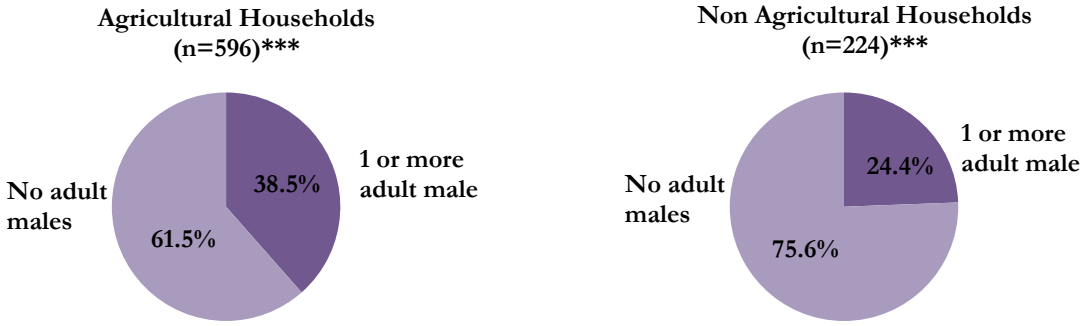
***Table 1:*** **Average Number of People Living within the Household**

| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Female | 4.3 | [4.2, 4.6] | 596 | 0.000 |
| | Male | 5.7 | [5.6, 5.9] | 1,878 | |
| | All | 5.4 | [5.2, 5.5] | 2,474 | |
| Non-Agricultural | Female | 3.4 | [3.0, 3.7] | 224 | 0.000 |
| | Male | 4.2 | [3.9, 4.5] | 567 | |
| | All | 3.9 | [3.7, 4.2] | 791 | |

*Questions sbq1, sbq2, sbq4, sbq5, stq1 through stq7*

A relatively small proportion of female-headed households have at least one adult male living within the household, as demonstrated in *Figure 3*. Adult males are defined as those men 18 years of age or older who are not household heads. Female-headed agricultural households were significantly more likely to have at least one adult male present within the household compared to female-headed non-agricultural households.

***Figure 3:*** **Proportion of Female-Headed Households with Adult Males Living within the Household**




****The difference in proportions between female-headed agricultural and non-agricultural households is statistically significant at the .01 level.*

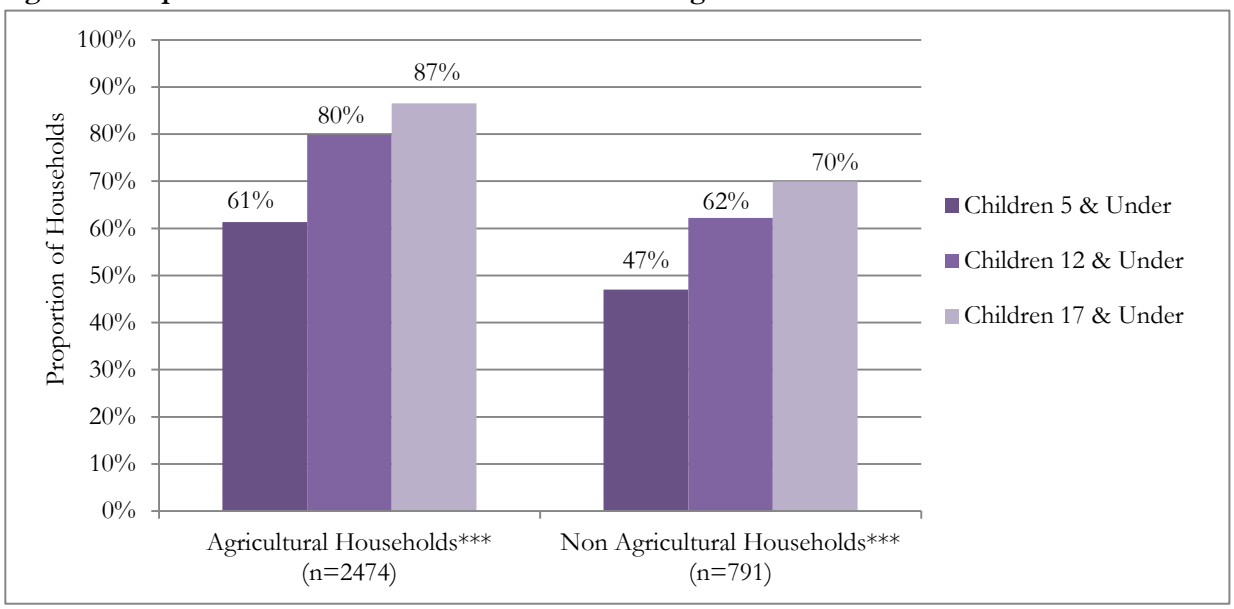
Additional results, including the mean number of adults 18 and older within the household and the mean number of non-household head adult males within each household, are provided in *Appendix B*.

[2] Significant at the .10 level, p>0.053..

## Household: Basic Household Characteristics of Children

An estimated 61% of agricultural households reported having at least one child five years old or younger living within the household. This proportion is significantly higher compared to non-agricultural household (47%) estimations. Agricultural households were also significantly more likely to have older children living within the household. The median number of children aged 17 and younger living within agricultural households was three, compared to two for non-agricultural households. *Figure 4* depicts the proportion of households that reported children five years old and younger, 12 years old and younger, or 17 years old and younger within the household.

***Figure 4:*** **Proportion of Households with Children Living at Home**




****The difference in proportions, across all household categories, of children 5 & under, 12 & under, and 17 & under is statistically significant at the .01 level.*

*Questions sbq1, sbq4, stq1 through stq7*

On average, male-headed households were significantly more likely to have a greater number of children living at home. *Appendix C* provides detailed descriptive statistics on the average number of children within a given household category and differences in child-household composition by male- and female-headed households.

*Table 2* shows the median number of children, within each aforementioned age category, by household type and gender of household head.

***Table 2:*** **Median Number of Children within the Household, by Age Category**

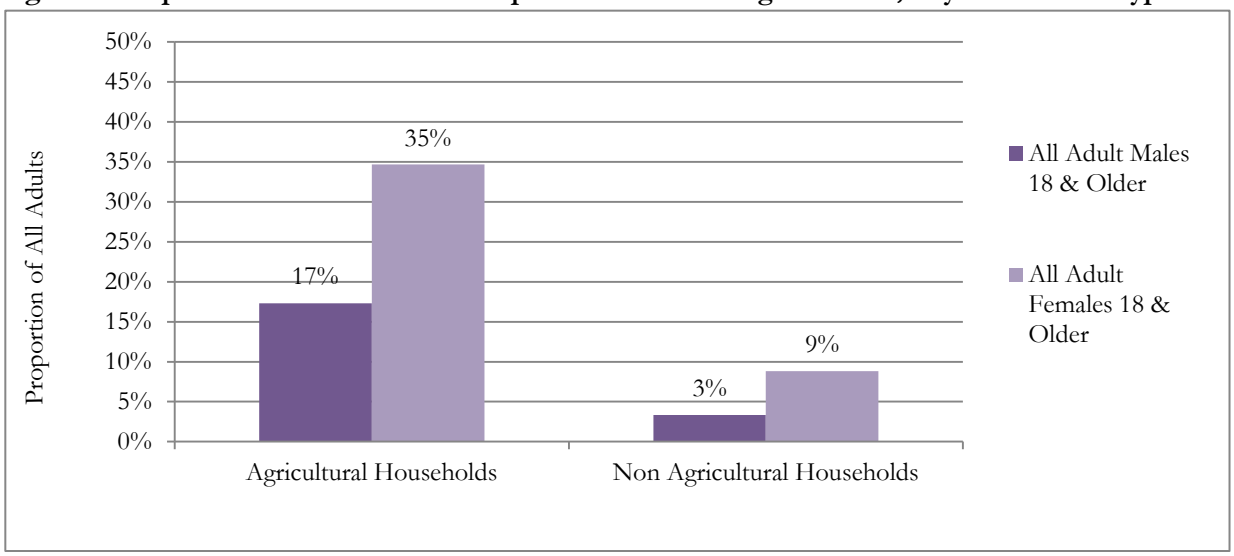
| Household Category | Gender of HH Head | Children 5 & Under | Children 12 & Under | Children 17 & Under | Observations |
|---|---|---|---|---|---|
| Agricultural | Male | 1 | 2 | 3 | 1,878 |
| | Female | 0 | 1 | 2 | 596 |
| Non-Agricultural | Male | 1 | 2 | 2 | 567 |
| | Female | 0 | 1 | 1 | 224 |

*Questions sbq1, sbq4, stq1 through stq7*

## Education: Adults

An estimated 31% (1,228 out of 4,304) of all Tanzanian female adults, and 15% (541 out of 3,735) of all Tanzanian male adults of the same age range, reported never attending school (*Did [NAME] ever go to school?*).[3] Adults are defined as individuals aged 18 years old or older and include household heads and non-household heads. *Figure 5* compares the proportion of all male and female adults that reported never attending school across agricultural and non-agricultural households. See *Appendix D* for more detail on the difference in the proportion of all adults that reported never attending school.

***Figure 5*: Proportion of All Adults that Reported "Never Going to School," by Household Type**




*Questions sbq2, sbq4, sc2q, stq1 through stq7*

Respondents were asked for their highest grade of completed education (*What is the highest grade completed by [NAME]?*). Grades included as options were non-formal adult education, two years of pre-primary education, eight years of primary education, four years of ordinary secondary education, two years of advanced secondary education, and five years of university. Respondents also indicated whether they received a diploma or completed ordinary or advanced secondary courses.

The mean number of years of completed education among adults 18 and older was lower across agricultural households compared to non-agricultural households; these differences were statistically significant.[4] *Table 3* provides an overview of education attainment by gender and household category. The calculations for mean years of completed education for adults 18 years of age and older excluded observations where the adult was currently in school (n=522).[5] Instances where the highest grade completed was not a formal grade – or a full year of school – were also excluded. These observations included adults who completed non-formal adult education (n=29), ordinary secondary courses (n=86), advanced secondary courses (n=30), a diploma (n=41),

[3] Note: there are 8,297 adults in the survey, however, only 8,039 observations of yes or no for *Did [NAME] ever go to school?*

[4] Significant at the .01 level, p>0.000

[5] 361 adults in agricultural households were in school at the time of the survey; two of these adults were household heads. 161 adults in non-agricultural households were still in school at the time of the survey; 10 of these were household heads.

or MS+ courses (n=79). *Appendix G* provides greater detail on education variable construction and data management issues.

***Table 3*: Mean Number of Years of Completed Education among Adults 18 & Older, by Gender and Household Type**

| Household Category | Gender | Mean | 95% C.I. | Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural*** | Male | 6.0 | [ 5.8 , 6.2 ] | 2,553 | 0.000 |
| | Female | 4.7 | [ 4.5 , 4.9 ] | 3,041 | |
| Non-Agricultural | Male | 8.6 | [ 8.2 , 8.9 ] | 671 | 0.000 |
| | Female | 7.7 | [ 7.4 , 8.0 ] | 913 | |

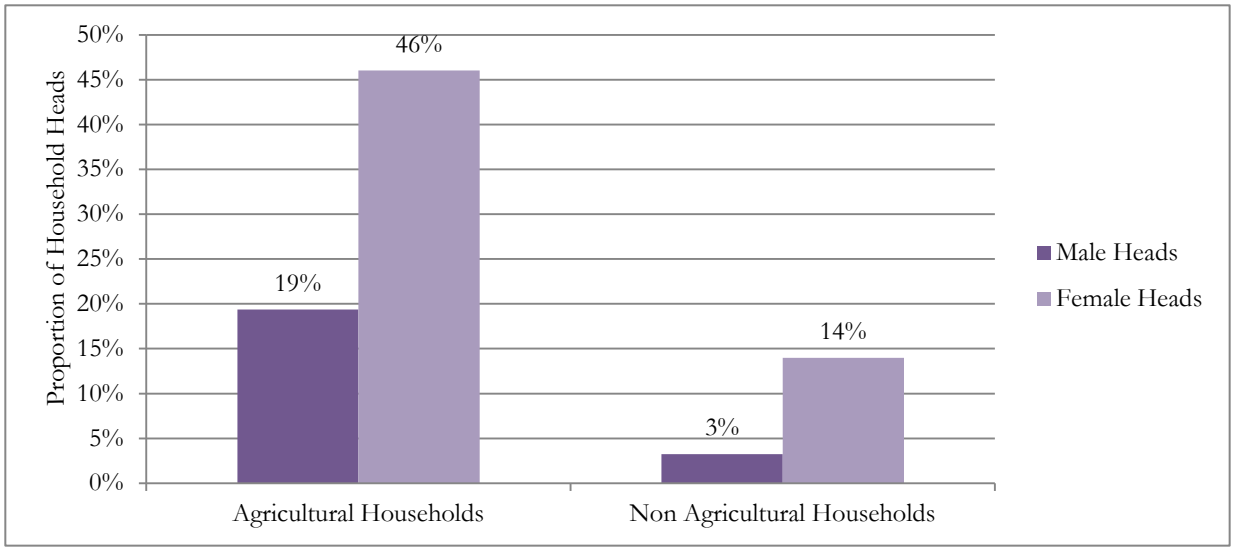
****The difference in years of education between adults in agricultural households and non-agricultural households is statistically significant at the .01 level.*

*Questions sbq2, sbq4, scq2, scq4, scq5, scq6, scq8, stq1 through stq7*

## Education: Household Heads

A greater proportion of female household heads reported never attending school, as indicated in *Figure 6* below. A detailed comparison of proportions and variances between male and female household head school attendance is provided in *Appendix D*.

***Figure 6:*** **Proportion of Household Heads that Did Not Attend School**



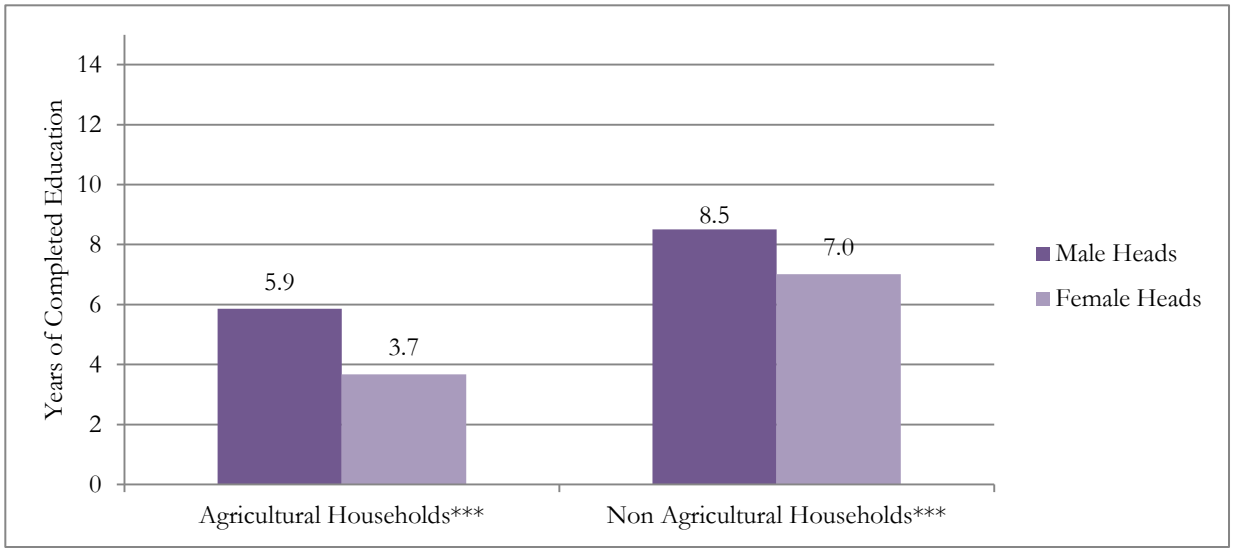

*Questions sbq2, sbq5, scq4, stq1through stq7*

The maximum number of years of completed education reported among adults was 19 (n=16), which equates to approximately a 5th year of tertiary (or university-level) education under the current Tanzanian education system.[6] Eleven agricultural household heads reported completing the maximum number of years (10 male heads and one female head).

On average, female agricultural household heads completed less than four years of school, compared to an estimated six years among male agricultural household heads. The difference in mean years of completed education between female and male heads was significant at the .01 level across all household categories, as shown in *Figure 7* below. See *Appendix D* for greater detail on variance across gender.

[6] http://www.tanzania.go.tz/educationf.html

***Figure 7*: Mean Years of Completed Education among Household Heads**




****Statistically significant at the .01 level.*

*Questions sbq2, sbq4, sbq5, scq2, scq4, scq5, scq6, scq8, stq1 through stq7*

## Education: Children

Approximately 95% of all Tanzanian households in the sample with school-aged children living at home (n=2,076) had at least one child currently enrolled in school (*Is {NAME} currently in school?*). School-aged is defined as a child between the ages of 5 and 17. *Table 4* shows the difference in the proportion of male- compared to female-headed households that had school-aged children enrolled in school. A smaller proportion of female-headed households had school-aged children enrolled in school; these gender differences were statistically significant among agricultural households and at the national level. See *Appendix E* for extended analysis.

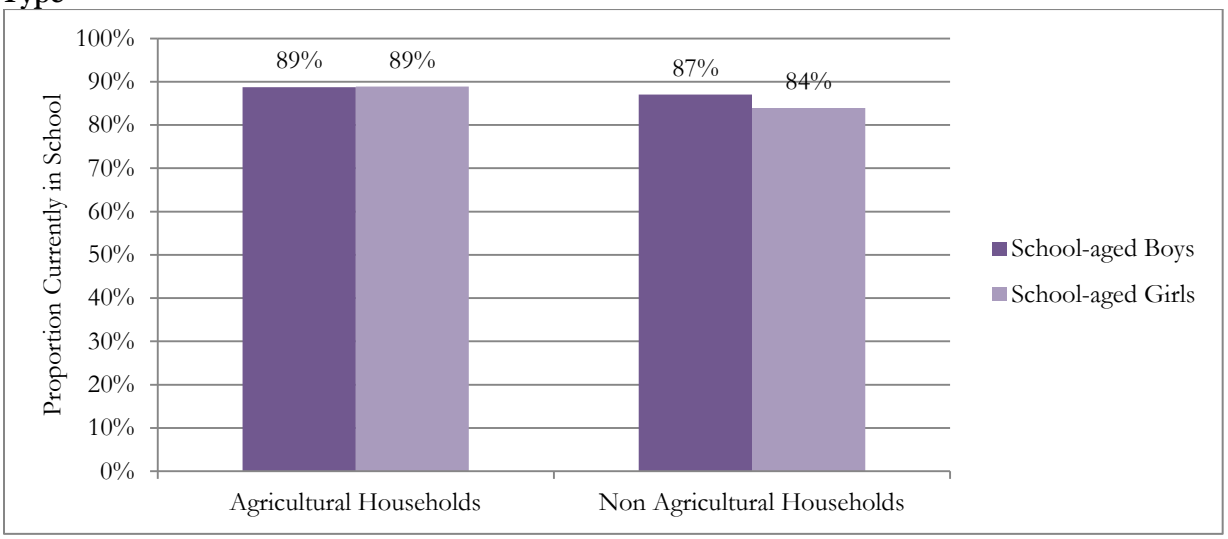
***Table 4:*** **Proportion of Households with School-Aged Children Currently in School, by Household Type and Gender of Household Head**

| Household Category | Gender of HH head | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 96% | [ 95% , 97% ] | 1255 | 0.076 |
| | Female | 94% | [ 91% , 96% ] | 404 | |
| Non-Agricultural | Male | 91% | [ 87% , 96% ] | 295 | 0.585 |
| | Female | 89% | [ 83% , 96% ] | 122 | |

*Questions sbq2, sbq4, sbq5, scq2, scq4, scq7, stq1 through stq7*

*Figure 8* compares the proportion of all school-aged boys and school-aged girls currently enrolled in school based on their household category. An equal proportion of school-aged boys (n=2,431) and school-aged girls (n=2,425) in agricultural households were in enrolled in school. Among non-agricultural households, a smaller proportion of school-aged girls (n=532) were enrolled compared to boys (n=478); however, the difference in proportions was not statistically significant. *Appendix E* provides confidence intervals and tests of significance for the figure below.

***Figure 8:*** **Proportion of All School-Aged Children Currently in School by Gender and Household Type**

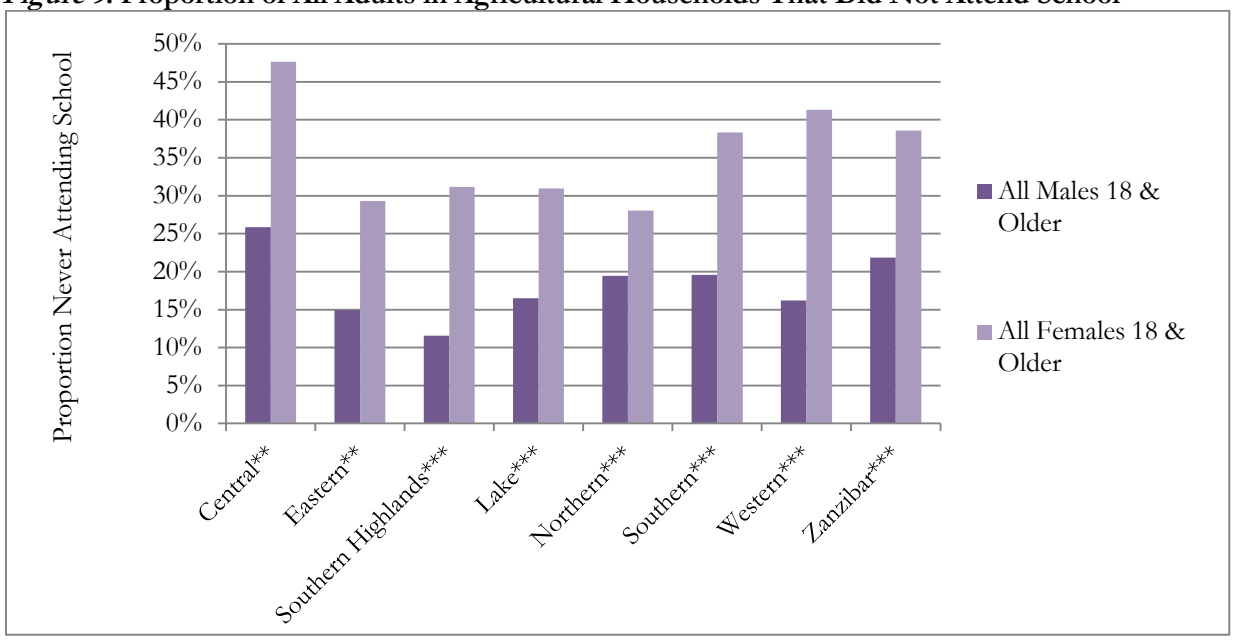



*Questions sbq2, sbq4, scq2, scq4, scq7, stq1 through stq7*

## Zone Analysis: Education

*Figure 9* illustrates the difference in the proportion of all adults 18 and older that did not attend school by administrative zone. Proportions are broken out by gender and represent adults (both household heads and non-household heads) living in agricultural households. The Central zone had the highest proportion of both male adults (n=158) and female adults (n=165) that did not attend school. The Southern Highlands had the lowest proportion – 12% – of male adults (n=357) that did not attend school whereas the Northern zone had the lowest proportion of female adults (n=469) that reported never attending school – 28%. The difference in the proportion of male compared to female adults that never attended school was statistically significant within each administrative zone. See *Appendix F* for detailed results.

***Figure 9*: Proportion of All Adults in Agricultural Households That Did Not Attend School**

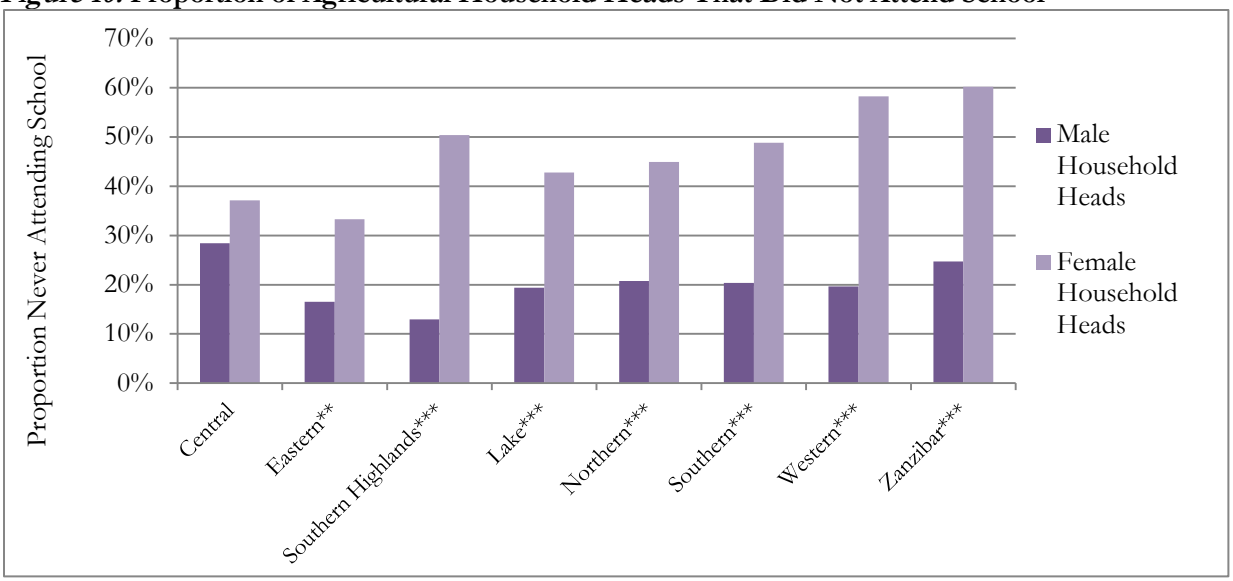



***Statistically significant at the 0.05 level*
****Statistically significant at the 0.01 level*

*Questions sbq2, sbq4, sc2q, stq1 through stq7*

The difference between the proportions of female agricultural household heads compared to the proportions of male agricultural heads that reported never attending school was statistically significant within each administrative zone with the exception of the Central zone, as shown in *Figure 10*.

***Figure 10:*** **Proportion of Agricultural Household Heads That Did Not Attend School**

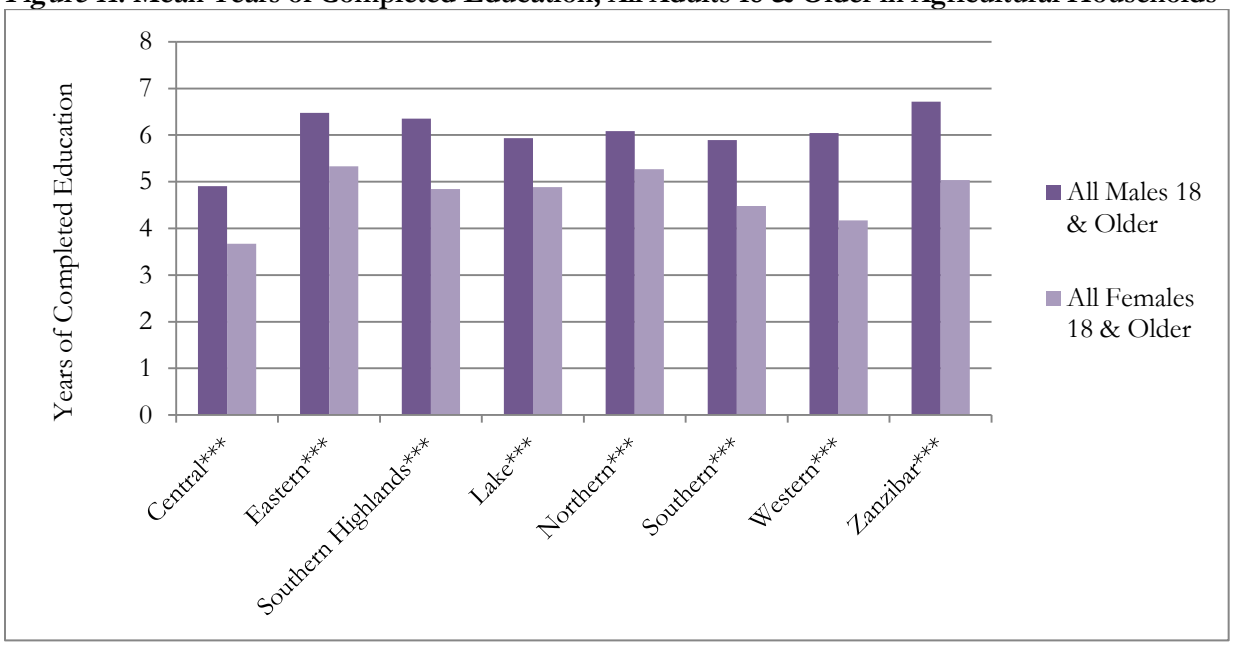



***Statistically significant at the 0.05 level* *Questions sbq2, sbq5, sc2q, stq1 through stq7*

****Statistically significant at the 0.01 level*

*Figure 11* shows the difference in the mean years of completed education among all adults 18 and older living in agricultural households, by administrative zone. Differences in the highest level of completed education are statistically significant when controlling for gender. *Appendix F* contains confidence intervals as well as Wald test P-values for *Figure 11*.

***Figure 11*: Mean Years of Completed Education, All Adults 18 & Older in Agricultural Households**

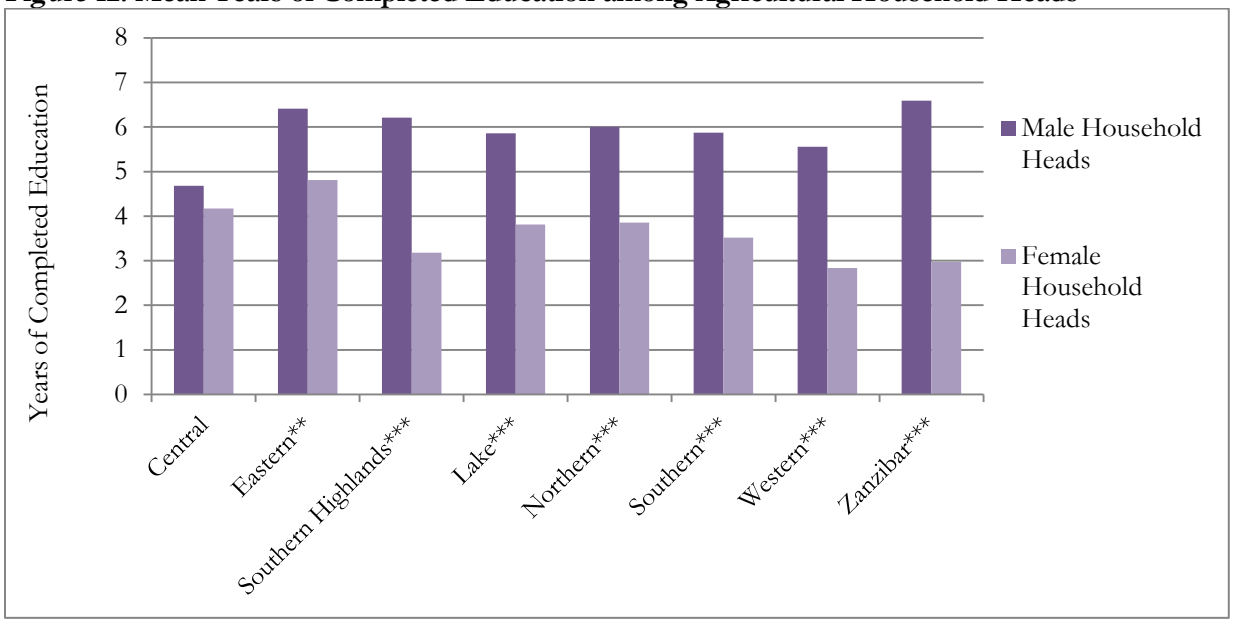



****Statistically significant at the 0.01 level* *Questions sbq2, sbq4, scq2, scq4, scq5, scq6, scq8, stq1 through stq7*

*Figure 12* compares the highest level of completed education between male and female agricultural household heads across all eight administrative zones. Gender differences in education were significant within each zone with the exception of the Central zone, where male agricultural household heads (n=99) achieved an estimated 4.7 years of education compared to 4.2 years among female agricultural household heads (n=32).

Female agricultural household heads in the Eastern zone (n=62) reported the highest educational attainment – 4.8 years of completed education – compared to female heads in all other zones. This figure was approximately two years lower than the *highest* reported average attainment for male-headed households (6.6 years of education in Zanzibar, n=220) and nearly equal to the lowest reported average for male-headed households (4.7 years in the Central zone, n=99).

***Figure 12:*** **Mean Years of Completed Education among Agricultural Household Heads**

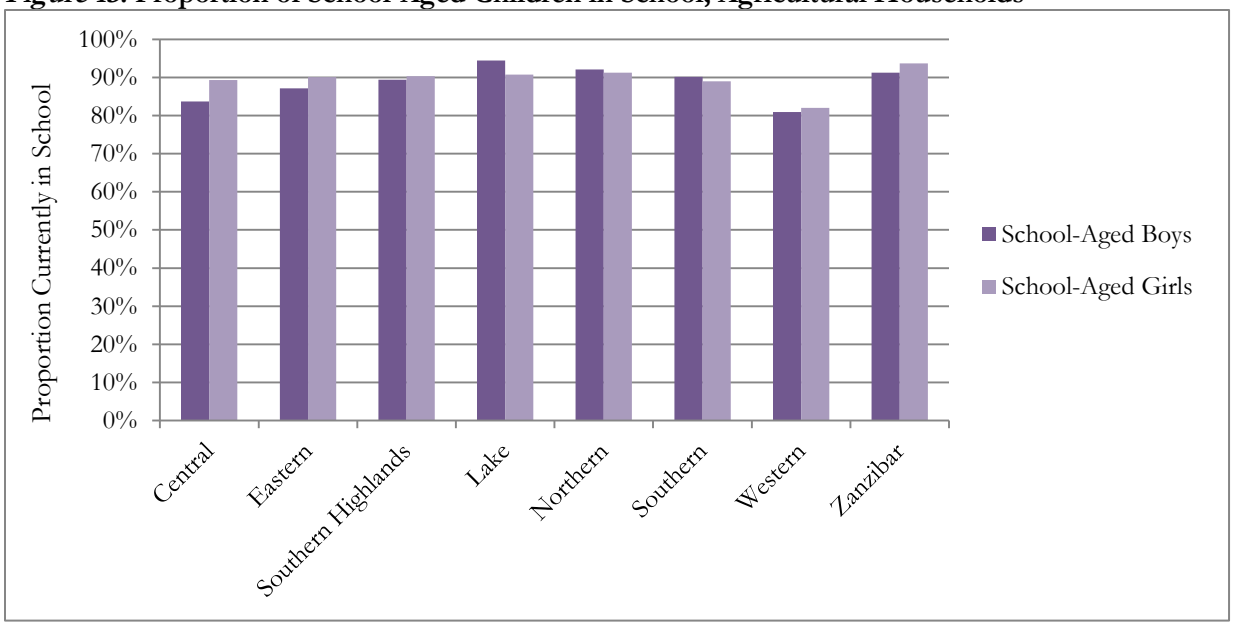



***Statistically significant at the 0.05 level*
****Statistically significant at the 0.01 level*

*Questions sbq2, sbq4, sbq5, scq2, scq4, scq5, scq6, scq8, stq1 through stq7*

When controlling for administrative zone, there was no statistical difference among agricultural households in the proportion of school-aged boys and girls enrolled in school, as illustrated in ***Figure 13*** below and *Appendix F*. The Lake zone had the highest proportion (94%) of boys (n=278) enrolled in school. The zone with the highest proportion of girls enrolled in school was Zanzibar at 94% (n=297). The Western zone had the lowest proportion of both boys (n=407) and girls (n=403) from agricultural households currently enrolled in school, at 81% and 82% respectively.

***Figure 13*: Proportion of School-Aged Children in School, Agricultural Households**




*Questions sbq2, sbq4, scq2, scq4, scq7, stq1 through stq7*

## Appendix A Basic Household Head Characteristics

Proportion of Female vs. Male-headed Households, by Household Category

| Gender of HH Head | Household Category | Proportion of HHs | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Female | Agricultural | 25% | [23%, 27%] | 596 | 0.053 |
| | Non Agricultural | 29% | [25%, 33%] | 224 | |
| Male | Agricultural | 75% | [73%, 77%] | 1,878 | 0.053 |
| | Non Agricultural | 71% | [67%, 75%] | 567 | |

Proportion of Agricultural Households that are Female Headed, by Zone (n=596)

| Zone | Proportion | 95% C.I. | Number of Observations |
|---|---|---|---|
| Northern | 29% | [ 24% , 35% ] | 106 |
| Southern Highlands | 27% | [ 21% , 32% ] | 94 |
| Southern | 27% | [ 21% , 32% ] | 122 |
| Lake | 25% | [ 19% , 31% ] | 62 |
| Central | 24% | [ 18% , 30% ] | 33 |
| Eastern | 24% | [ 18% , 29% ] | 68 |
| Western | 19% | [ 15% , 23% ] | 61 |
| Zanzibar | 17% | [ 13% , 22% ] | 50 |

Mean Age of Household Head, by Household Category and Gender and Gender of HH Head

| Household Category | Gender of HH Head | Mean Age | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 45.8 | [44.9, 46.7] | 1,878 | 0.000 |
| | Female | 51.7 | [50.1, 53.4] | 596 | |
| Non-Agricultural | Male | 37.6 | [36.3, 39.0] | 567 | 0.196 |
| | Female | 39.7 | [36.9, 42.6] | 224 | |

## Appendix B Adults within the Household

| Mean Number of Adults 18 & Older in Household, by Household Category and Gender of Head | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Male | 2.7 | [2.6, 2.8] | 1,878 | 0.000 |
| | Female | 2.0 | [1.9, 2.1] | 596 | |
| Non-Agricultural | Male | 2.4 | [2.3, 2.6] | 567 | 0.000 |
| | Female | 1.9 | [1.7, 2.1] | 224 | |

| Proportion of Female-Headed Household with at Least 1 Adult Male Living within the Household | | | | |
|---|---|---|---|---|
| Household Category | Proportion of HHs | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | 39% | [34%, 43%] | 596 | 0.0054 |
| Non-Agricultural | 26% | [16%, 33%] | 224 | |

| Mean Number of Adult Males in Household, by Household Category and Gender of Head | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Male | 1.4 | [1.36, 1.44] | 1,878 | 0.000 |
| | Female | 0.5 | [0.47, 0.62] | 596 | |
| Non-Agricultural | Male | 1.3 | [1.23, 1.37] | 567 | 0.000 |
| | Female | 0.4 | [0.22, 0.48] | 224 | |

| Mean Agricultural Household Size, by Zone (n=2474) | | | |
|---|---|---|---|
| Zone | Mean | 95% C.I. | Number of Observations |
| Western | 6.7 | [ 6.3 , 7.1 ] | 323 |
| Lake | 6.2 | [ 5.6 , 6.7 ] | 253 |
| Zanzibar | 5.6 | [ 5.2 , 6.1 ] | 281 |
| Northern | 5.2 | [ 4.9 , 5.5 ] | 367 |
| Central | 5.0 | [ 4.7 , 5.4 ] | 131 |
| Eastern | 4.8 | [ 4.3 , 5.2 ] | 307 |
| Southern Highlands | 4.8 | [ 4.5 , 5.1 ] | 348 |
| Southern | 4.4 | [ 4.2 , 4.6 ] | 459 |

## Appendix C Children within the Household

Proportion of Households with Children 5 and under Living within the Household

| Household Category | Gender of HH Head | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 66% | [63%, 68%] | 1,878 | 0.000 |
| | Female | 48% | [44%, 53%] | 596 | |
| Non-Agricultural | Male | 52% | [46%, 57%] | 567 | 0.000 |
| | Female | 35% | [29%, 42%] | 224 | |

Mean Number of Children 5 and under, by Household Category and Gender of Head

| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 1.2 | [1.10, 1.23] | 1,878 | 0.000 |
| | Female | 0.7 | [0.65, 0.84] | 596 | |
| Non-Agricultural | Male | 0.7 | [0.64, 0.82] | 567 | 0.000 |
| | Female | 0.4 | [0.34, 0.51] | 224 | |

Proportion of Households with Children 12 and Under Living within the Household

| Household Category | Gender of HH Head | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 82% | [80%, 84%] | 1,878 | 0.000 |
| | Female | 73% | [69%, 77%] | 596 | |
| Non-Agricultural | Male | 66% | [60%, 71%] | 567 | 0.007 |
| | Female | 54% | [47%, 61%] | 224 | |

Mean Number of Children 12 and Under, by Household Category and Gender of Head

| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
|---|---|---|---|---|---|
| Agricultural | Male | 2.3 | [2.2, 2.4] | 1,878 | 0.000 |
| | Female | 1.7 | [1.5, 1.8] | 596 | |
| Non-Agricultural | Male | 1.3 | [1.2, 1.5] | 567 | 0.001 |
| | Female | 1 | [0.8, 1.1] | 224 | |

| Proportion of Households with Children under 18 Living at Home | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Male | 88% | [86%, 89%] | 1,878 | 0.014 |
| | Female | 83% | [80%, 86%] | 596 | |
| Non-Agricultural | Male | 72% | [66%, 77%] | 567 | 0.221 |
| | Female | 66% | [59%, 73%] | 224 | |

| Mean Number of Children under 18, by Household Category and Gender of Head | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Male | 3.0 | [2.9, 3.1] | 1,878 | 0.000 |
| | Female | 2.4 | [2.2, 2.6] | 596 | |
| Non-Agricultural | Male | 1.8 | [1.5, 2.0] | 567 | 0.0617 |
| | Female | 1.5 | [1.3, 1.7] | 224 | |

## Appendix D Education Attainment among Adults 18 and Older & Household Heads

| Proportion of Adults 18 & Older that Did Not Attend School, by Gender | | | | |
|---|---|---|---|---|
| Household Category | Gender | Proportion | 95% C.I. | Number of Observations |
| Agricultural | Male | 17% | [ 15% , 19% ] | 2889 |
| | Female | 35% | [ 32% , 37% ] | 3263 |
| Non-Agricultural | Male | 3% | [ 2% , 5% ] | 846 |
| | Female | 9% | [ 7% , 11% ] | 1041 |

| Proportion of Adults 18 & Older that Did Attend School, by Gender | | | | |
|---|---|---|---|---|
| Household Category | Gender | Proportion | 95% C.I. | Number of Observations |
| Agricultural | Male | 83% | [ 81% , 85% ] | 2889 |
| | Female | 65% | [ 63% , 68% ] | 3263 |
| Non-Agricultural | Male | 97% | [ 95% , 98% ] | 846 |
| | Female | 91% | [ 89% , 93% ] | 1041 |

| Proportion of Household Heads that Did Not Attend School, by Gender | | | | |
|---|---|---|---|---|
| Household Category | Gender | Proportion | 95% C.I. | Number of Observations |
| Agricultural | Male | 19% | [ 17% , 22% ] | 1849 |
| | Female | 46% | [ 41% , 51% ] | 593 |
| Non-Agricultural | Male | 3% | [ 1% , 5% ] | 555 |
| | Female | 14% | [ 8% , 20% ] | 223 |

| Proportion of Household Heads that Did Attend School, by Gender | | | | |
|---|---|---|---|---|
| Household Category | Gender | Proportion | 95% C.I. | Number of Observations |
| Agricultural | Male | 81% | [ 78% , 83% ] | 1849 |
| | Female | 54% | [ 49% , 59% ] | 593 |
| Non-Agricultural | Male | 97% | [ 95% , 99% ] | 555 |
| | Female | 86% | [ 80% , 92% ] | 223 |

| Mean Number of Years of Completed Education among Household Heads | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Mean | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Male | 5.9 | [ 5.6 , 6.1 ] | 1,763 | 0.000 |
| | Female | 3.7 | [ 3.3 , 4.0 ] | 578 | |
| Non-Agricultural | Male | 8.5 | [ 8.2 , 8.8 ] | 487 | 0.000 |
| | Female | 7.0 | [ 6.4 , 7.6 ] | 199 | |

| Mean Years of Completed Education, All Adults 18 & Older in Agricultural HH's, by Zone | | | |
|---|---|---|---|
| Zone | Mean | 95% C.I. | Number of Observations |
| Eastern | 5.9 | [ 5.34 , 6.4 ] | 687 |
| Zanzibar | 5.8 | [ 4.98 , 6.7 ] | 670 |
| Northern | 5.6 | [ 5.18 , 6.1 ] | 797 |
| Southern Highlands | 5.5 | [ 5.22 , 5.8 ] | 697 |
| Lake | 5.4 | [ 4.87 , 5.9 ] | 591 |
| Southern | 5.1 | [ 4.73 , 5.5 ] | 965 |
| Western | 5.0 | [ 4.66 , 5.4 ] | 881 |
| Central | 4.3 | [ 3.56 , 4.9 ] | 306 |

## Appendix E Education & Children

| Proportion of Households with School-Aged Children Currently in School, by Household Category | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of HH Head | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural* | Male | 96% | [ 95% , 97% ] | 1,255 | 0.076 |
| | Female | 94% | [ 91% , 96% ] | 404 | |
| | All | 95% | [ 94% , 97% ] | 1,659 | |
| Non-Agricultural* | Male | 91% | [ 87% , 96% ] | 295 | 0.585 |
| | Female | 89% | [ 83% , 96% ] | 122 | |
| | All | 91% | [ 87% , 94% ] | 417 | |

*The difference between all agricultural and all non-agricultural households is significant at the .05 level (p>0.0124).

| Proportion of School-Aged Boys & Girls Currently in School, by Household Category | | | | | |
|---|---|---|---|---|---|
| Household Category | Gender of Child | Proportion | 95% C.I. | Number of Observations | Wald Test P-value |
| Agricultural | Boys | 89% | [87%, 90% ] | 2,431 | 0.929 |
| | Girls | 89% | [87%, 90% ] | 2,425 | |
| Non-Agricultural | Boys | 87% | [81%, 93% ] | 478 | 0.441 |
| | Girls | 84% | [80%, 88% ] | 532 | |

## Appendix F Zonal Analysis & Education

| Proportion of All Male Adults 18 & Older that Never Attended School, Agricultural Households | | | |
|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations |
| Central | 26% | [18%, 33%] | 158 |
| Zanzibar | 22% | [12%, 31%] | 366 |
| Southern | 20% | [15%, 24%] | 451 |
| Northern | 19% | [13%, 26%] | 411 |
| Lake | 17% | [12%, 21%] | 309 |
| Western | 16% | [12%, 20%] | 450 |
| Eastern | 15% | [10%, 20%] | 387 |
| Southern Highlands | 12% | [8.0%, 15%] | 357 |

| Proportion of All Female Adults 18 & Older that Never Attended School, Agricultural Households | | | | |
|---|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations | Wald Test P-value* |
| Central | 48% | [36%, 59%] | 165 | 0.032 |
| Western | 41% | [36%, 47%] | 496 | 0.000 |
| Zanzibar | 39% | [31%, 46%] | 390 | 0.002 |
| Southern | 38% | [33%, 44%] | 569 | 0.000 |
| Southern Highlands | 31% | [27%, 35%] | 407 | 0.000 |
| Lake | 31% | [25%, 37%] | 342 | 0.002 |
| Eastern | 29% | [22%, 36%] | 425 | 0.035 |
| Northern | 28% | [23%, 33%] | 469 | 0.003 |

**When comparing female adults to male adults within zone*

| Proportion of Male Agricultural Household Heads that Never Attended School | | | |
|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations |
| Central | 28% | [ 19% , 38% ] | 103 |
| Zanzibar | 25% | [ 17% , 33% ] | 228 |
| Northern | 21% | [ 14% , 27% ] | 257 |
| Southern | 20% | [ 14% , 26% ] | 331 |
| Western | 20% | [ 14% , 25% ] | 254 |
| Lake | 19% | [ 13% , 26% ] | 187 |
| Eastern | 17% | [ 10% , 24% ] | 238 |
| Southern Highlands | 13% | [ 8% , 18% ] | 251 |

| Proportion of Female Agricultural Household Heads that Never Attended School | | | | |
|---|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations | Wald Test P-value* |
| Zanzibar | 60% | [ 42% , 78% ] | 50 | 0.000 |
| Western | 58% | [ 45% , 72% ] | 61 | 0.000 |
| Southern Highlands | 50% | [ 37% , 63% ] | 92 | 0.000 |

| | | | | |
|---|---|---|---|---|
| Southern | 49% | [ 38% , 60% ] | 122 | 0.000 |
| Northern | 45% | [ 34% , 56% ] | 106 | 0.000 |
| Lake | 43% | [ 30% , 55% ] | 61 | 0.000 |
| Central | 37% | [ 18% , 56% ] | 33 | 0.415 |
| Eastern | 33% | [ 20% , 47% ] | 68 | 0.031 |

**When comparing female agricultural household heads to male agricultural household heads within zone*

Mean Years of Completed Education among All Adults 18 & Older, Agricultural Households

| Zone | Mean | 95% C.I. | Number of Observations |
|---|---|---|---|
| Eastern | 5.9 | [5.4, 6.4] | 687 |
| Zanzibar | 5.8 | [5.0, 6.8] | 670 |
| Northern | 5.6 | [5.2, 6.2] | 797 |
| Southern Highlands | 5.5 | [5.3, 5.9] | 697 |
| Lake | 5.4 | [4.9, 5.9] | 591 |
| Southern | 5.1 | [4.8, 5.5] | 965 |
| Western | 5.0 | [4.7, 5.5] | 881 |
| Central | 4.3 | [3.6, 5.0] | 306 |

Mean Years of Completed Education among Male Adults 18 & Older, Agricultural Households

| Zone | Mean | 95% C.I. | Number of Observations |
|---|---|---|---|
| Zanzibar | 6.7 | [5.7, 7.8] | 321 |
| Eastern | 6.5 | [6.0, 7.1] | 315 |
| Southern Highlands | 6.4 | [6.0, 6.8] | 315 |
| Northern | 6.1 | [5.5, 6.8] | 364 |
| Western | 6.0 | [5.7, 6.5] | 405 |
| Southern | 5.9 | [5.5, 6.4] | 418 |
| Lake | 5.9 | [5.4, 6.5] | 270 |
| Central | 4.9 | [4.2, 5.7] | 145 |

Mean Years of Education among Female Adults 18 & Older, Agricultural Households

| Zone | Mean | 95% C.I. | Number of Observations | Wald Test P-value* |
|---|---|---|---|---|
| Eastern | 5.3 | [4.8, 6] | 372 | 0.000 |
| Northern | 5.3 | [4.9, 5.8] | 433 | 0.006 |
| Zanzibar | 5.0 | [4.3, 5.9] | 349 | 0.000 |
| Lake | 4.9 | [4.4, 5.5] | 321 | 0.000 |
| Southern Highlands | 4.8 | [4.5, 5.2] | 382 | 0.000 |
| Southern | 4.5 | [4.1, 5] | 547 | 0.000 |
| Western | 4.2 | [3.8, 4.6] | 476 | 0.000 |
| Central | 3.7 | [2.9, 4.6] | 161 | 0.008 |

**When comparing female adults to male adults within zone*

| Mean Years of Completed Education among Male Headed Agricultural Households | | | |
|---|---|---|---|
| Zone | Mean | 95% C.I. | Number of Observations |
| Zanzibar | 6.6 | [5.8, 7.4] | 220 |
| Eastern | 6.4 | [5.8, 7.2] | 217 |
| Southern Highlands | 6.2 | [5.8, 6.7] | 244 |
| Northern | 6.0 | [5.4, 6.7] | 248 |
| Southern | 5.9 | [5.4, 6.4] | 319 |
| Lake | 5.9 | [5.2, 6.6] | 177 |
| Western | 5.6 | [5.1, 6.1] | 239 |
| Central | 4.7 | [4.0, 5.4] | 99 |

| Mean Years of Completed Education among Female Headed Agricultural Households | | | |
|---|---|---|---|
| Zone | Mean | 95% C.I. | Number of Observations |
| Eastern | 4.8 | [3.9, 5.9] | 62 |
| Central | 4.2 | [2.8, 5.7] | 32 |
| Northern | 3.9 | [3.1, 4.7] | 103 |
| Lake | 3.8 | [3.0, 4.7] | 60 |
| Southern | 3.5 | [2.8, 4.3] | 120 |
| Southern Highlands | 3.2 | [2.3, 4.2] | 91 |
| Zanzibar | 3.0 | [1.7, 4.4] | 50 |
| Western | 2.8 | [1.9, 3.8] | 60 |

| Proportion of School-Aged Boys in School, Agricultural Households | | | |
|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations |
| Lake | 94% | [91%, 97%] | 278 |
| Northern | 92% | [89%, 95%] | 382 |
| Zanzibar | 91% | [87%, 95%] | 324 |
| Southern | 90% | [86%, 94%] | 332 |
| Southern Highlands | 89% | [85%, 93%] | 314 |
| Eastern | 87% | [81%, 93%] | 273 |
| Central | 84% | [74%, 93%] | 121 |
| Western | 81% | [77%, 85%] | 407 |

| Proportion of School-Aged Girls in School, Agricultural Households | | | | |
|---|---|---|---|---|
| Zone | Proportion | 95% C.I. | Number of Observations | Wald Test P-value* |
| Zanzibar | 94% | [90%, 97%] | 297 | 0.353 |
| Northern | 91% | [88%, 94%] | 363 | 0.652 |
| Lake | 91% | [87%, 95%] | 309 | 0.119 |
| Southern Highlands | 90% | [86%, 94%] | 331 | 0.753 |
| Eastern | 90% | [87%, 93%] | 248 | 0.273 |
| Central | 89% | [82%, 96%] | 104 | 0.380 |
| Southern | 89% | [86%, 92%] | 370 | 0.669 |
| Western | 82% | [77%, 87%] | 403 | 0.750 |

**When comparing school-aged girls to school-aged boys within zone*

## Appendix G Education Data Issues

| Issue | Description | # of Observations Affected | Direction of Effect | Magnitude of Effect |
|---|---|---|---|---|
| Survey design and variable construction for "highest year of completed education" among all adults 18 and older. | Survey question scq6 (*What is the highest grade completed by [NAME]?)* does not capture the number of individuals that never attended school (scq2: *Did [NAME] ever go to school*?). By not including observations of "0" for highest grade, the survey over-estimates the level of educational attainment. | 1,769 adults 18 and older never attended school; these observations were coded as "0" for the highest education level achieved. | Reduces the mean years of completed education. | Large among adults 18 and older in agricultural households (mean years of completed education drops from 7.45 years to 5.30 years) and small among adults in non-agricultural households (mean drops from 8.7 years to 8.06 years) |
| Survey design and variable construction for "highest year of completed education" among all adults 18 and older. | Survey question scq6 (*What is the highest grade completed by [NAME]?)* does not capture education attainment for adults who are currently not in school (scq4: *Is [NAME] currently in school*?), but who attended school last year (scq5: *Was [NAME] in school last year?* and scq8: *What grade was [NAME] attending last year*?). Exclusion of these observations under-estimates the highest level of education achieved. | 111 observations of adults 18 and older. | Increases the mean years of completed education. | Small. Working off the recoded variable presented above; the mean would have been 5.25 years of completed education vs. 5.30 years for adults in agricultural households - and 7.97 years vs. 8.06 years among adults in non-agricultural households – if the 111 observations not included. |
| Survey question scq6: *What is the* | The survey lists 8 years of primary | 68 observations of "D8" (or year 8 of | All 99 observations of year 8 were | Negligible. The denominator for |

| | | | | |
|---|---|---|---|---|
| *highest grade completed by [NAME]?* | school when the United Republic of Tanzania currently offers only 7 years.[7] All observations of "year 8" in primary school appear to be a phased out year of education that is equivalent to a first year of secondary school. | primary school) among all adults 18 and older in agricultural households; 31 observations among adults in non-agricultural households. | recoded to equal a first year of secondary school (or 9th year of education); this could lead to an over-estimation of the number of years of completed education among respondents. | calculating the mean years of completed education among all adults 18 years and older is 5,594 for adults in agricultural households and 1,584 for adults in non-agricultural households. |
| Survey question scq8: *What grade was [NAME] attending last year?* | Same issue as survey question scq6. | 4 observations of adults in agricultural households that reported attending an 8th year of primary school. | All 4 observations were coded as equivalent to the first year of secondary school, which could over-estimate actual education attainment. | Negligible due to the large denominator (n=5,594) of adults 18 and older in agricultural households that reported 0-19 years of completed education. |
| Survey design and variable construction for "highest year of completed education" among all adults 18 and older. | Observations where the highest level of education achieved was not a full year of school were excluded. These include O Courses, A+ Courses, MS+ Courses, and Diploma. | 86 observations of O Courses, 30 observations of A+ Courses, 41 Diplomas, 79 MS+ Courses. These observations are for both non-agricultural and agricultural households (scq2, scq4, scq5, scq6, scq8). | May reduce mean. | Negligible. |

[7] http://www.tanzania.go.tz/educationf.html