3 Respondent and household demographics

Bymolt, R., Laven, A., Tyszler, M. (2018). Demystifying the cocoa sector in Ghana and Côte d'Ivoire. Chapter 3, Respondent and household demographics. The Royal Tropical Institute (KIT).

3.1 Demographics

As described in the Methodology chapter, household surveys were conducted across the cocoa growing regions of Ghana and Côte d'Ivoire. In all, 1,560 surveys were conducted in Ghana (66% male, 34% female) and 1,485 surveys were administered in Côte d'Ivoire (66% male, 34% female).

Data was gathered on a number of different household characteristics of the respondent and household head, such as age, education, sex, marital status, immigrant status, leadership role, and household composition.

Household demographic data is presented in this section in basic descriptive form. Later, we analyse how this data interacts with the choice to grow cocoa (or engage in other activities) and how household characteristics may affect livelihood outcomes. Demographic data also allows for regression analysis on minimum achieved Dietary Diversity Score, access to assets, productivity levels, certain crop choices, and many other dependent variables. We also attempt to use this data for a 'cluster analysis' to understand whether or not households fall naturally into certain categories, and the implication of these findings for cocoa programmes.

In presenting the demographics, we make a distinction between 'cocoa households' and 'non-cocoa households'. We define 'cocoa households' as households for which cocoa was reported as either their most important or second most important crop. This definition was an intentional outcome of the survey design – respondents were only asked a detailed set of questions for their two most important crops due to time constraints. For Ghana, cocoa households comprised 84% of the total sample (N= 1,318) and in Côte d'Ivoire 61% (N =910).

The distinction between cocoa and non-cocoa households allows us to analyse whether certain characteristics are specific to cocoa households, or whether they are more general phenomena associated with rural smallholders. Where statistically significant regional differences were found, these have been presented.

3.1.1 Sex of respondent and sex of the household head

In a number of previous cocoa studies, the sex of cocoa farmers (often discussed in terms of gender) has been a prominent characteristic of

analysis.[1, 2, 3, 4, 5] Sector organisations, such as the World Cocoa Foundation,[6] and international NGOs such as Oxfam's Behind the Brands Campaign[7] and CARE International,[8] likewise, bring attention to gender differences.

Most of these studies identify and discuss gender inequalities, such as differences in rates of participation in cocoa production activities, unequal access to land, labour, and inputs, more limited access to training and farmer organisation membership, poorer access to credit, and generally less control over income earned from the sale of cocoa.[9,10] Some studies stress that female farmers have higher operational costs, as they depend more on hired labour[11] or, because they cannot afford hired labourers, they rely more on child labour.[12]

In most cocoa studies, the overall sample size is small, or the proportion of female respondents in the sample is low. This makes it challenging to draw firm conclusions about how certain gender differences play out and affect livelihood outcomes, not just for the individual but also for the household.

To allow us to test for possible gender differences in this study, we deliberately aimed at a minimum of one third of female respondents (Table 3.1). As gender is a cross-cutting theme, gender differences are reported in each section, with a specific chapter on intra-household dynamics bringing together the most important of these findings.

Table 3.1 Respondent sex and percent of respondents, by country

	Ghana	Côte d'Ivoire	pvalue	sig
Male respondents	66%	66%	0.58	
Female respondents	34%	34%		
N	1,560	1,485		
p1_respondent_gender				

[1] Vigneri, M. and Serra, R. (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at: http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

[2] Vigneri, M. and Holmes, R. (2009) Gender pathways out of poverty. Rural Employment. FAO, ILO. Available at http://www.fao-ilo.org/fileadmin/user_upload/fao_ilo/pdf/Papers/20_March/Vigneri-Holmes-final.pdf

[3] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/progress/mapping-sustainable-production-in-ghanaian-cocoa

[4] Barrientos, S., and Adwoa Owusuaa, B. (2016) Promoting Gender Equality in the Cocoa-Chocolate Value Chain: Opportunities and Challenges in Ghana. GDI Working Paper 2016-006. Manchester: The University of Manchester. Available at http://hummedia.manchester.ac.uk/institutes/gdi/publications/workingpapers/GDI/GDI_WP2016006_Barrientos_Bobie.pdf

[5] Fountain, A.C. and Hütz-Adams, F. (2015) Cocoa Barometer 2015-USA Edition. Available at http://www.cocoabarometer.org/International_files/Cocoa%20Barometer%202015%20USA.pdf

[6] World Cocoa Foundation (n.d.) The Gender and Cocoa Livelihoods Toolbox. Available at http://genderandcocoalivelihoods.org/

[7] McFall, M., Rodehau, C., Wofford, D. (2017). Oxfam's "Behind the Brands" Campaign," Case Study. Washington, DC: Population Council, The Evidence Project. Available at http://evidenceproject.popcouncil.org/wp-content/uploads/2017/03/Case-Study-2-Oxfam.pdf

[8] CARE International, Mondelez International's Cocoa Life program. (2016). Women's Leadership in Cocoa Life Communities. Emerging best practices of women's leadership within cocoa farming in Ghana and Côte d'Ivoire. Available at https://insights.careinternational.org.uk/publications/women-s-leadership-in-cocoa-life-communities

[9] FAO (2012). Gender inequalities in rural employment in Ghana: an overview. Gender, Equity, and Rural Employment Division of FAO. Available at http://www.fao.org/docrep/016/ap091e/ap091e00.pdf

[10] Fair Labor Association (2015). Evaluer la situation actuelle des femmes et des jeunes agriculteurs et l'état nutritional de leurs familles dans deux communautés productrice de cacao en Côte d'Ivoire. Rapport preparé par Fair Labour Association, Juillet 2015. Available at http://www.fairlabor.org/sites/default/files/documents/reports/femmes_et_des_jeunes_nutrition_dans_communautes_de_dacao_juillet_2015.pdf

[11] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/progress/mapping-sustainable-production-in-ghanaian-cocoa

[12] Vigneri, M. and Serra, R (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at: http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

To be consistent with most other household surveys, the 'head of the household' was not defined by the researchers, but was self-determined by respondents. Being the head of the household typically implies an important role in certain decision-making and is often related to ownership over assets such as land.

Some studies indicate that it matters whether or not the household is male headed or female headed in terms of food security and poverty rates. For example, in Ghana poverty rates among female-headed households are lower than those of their male counterparts.[13] Also, the Ghana Living Standards Survey reports that, "Poverty incidence among male-headed households is higher (25.9%) than female-headed households (19.1%)" and that this, "follows the same pattern found in 2005/06."[14]

In our study, most respondents in both countries self-identified as the head of the household (Ghana 78%, Côte d'Ivoire 69%) and, as expected, there were highly significant gender differences in both Ghana (45% female respondents) and Côte d'Ivoire (26% females) (Table 3.2). In Ghana, although 55% of female respondents in Ghana did not identify as the household head, nevertheless, they contributed their knowledge to the research in both the household surveys and focus group discussions. In 95% of cases, male respondents self-identified as the household head, and those who were not the head were often the son of the head.

In Côte d'Ivoire, fewer female respondents identified as the household head and 74% did not. Among male respondents, 90% said they were the household head and 10% said they were not.

Throughout this report, we usually report significant differences between male and female-headed households, rather than between male and female respondents. This is because most survey questions in our study were targeted at the household unit. We also note that male headed households frequently include females who also participate in cocoa production and other supporting activities. Likewise, female headed households also frequently include male household members who also contribute to farming and other related activities.

Table 3.2 Respondent is head of the household, percent of respondents, by sex of respondent

	Ghana Female respondent	Ghana Male respondent	Côte d'Ivoire Female respondent	Côte d'Ivoire Male respondent
Head	45%	95%	26%	90%
Non-head	55%	5%	74%	10%
N	538	1,022	498	987
p1_respondent_head_yn				

Note: Pvalue is 0.00 for Ghana (highly significant) and 0.00 for Côte d'Ivoire (highly significant). Table has been modified for ease of reading.

[13] FAO (2012). Gender inequalities in rural employment in Ghana: an overview. Gender, Equity, and Rural Employment Division of FAO. Available at http://www.fao.org/docrep/016/ap090e/ap090e00.pdf

[14] Although both sexes have seen a decline in poverty, the rate is three times greater for male headed households (9 percentage points compared with 3 percentage points for female headed households). Ghana Statistical Service. (2014). Ghana living standards survey round 6 (GLSS 6), Poverty profile in Ghana 2005-2013. Available at http://www.statsghana.gov.gh/docfiles/glss6/GLSS6_Poverty%20Profile%20in%20Ghana.pdf p.19

3.1.2 Age

The age of cocoa farmers has sometimes been a contentious discussion in the cocoa sector. There is some concern that cocoa farmers are getting older and could become unproductive. For example, Aneani *et al*. argue that, "The age of cocoa farmers is predicted to have a negative impact on adoption because, as the age increases, his physical strength tends to reduce and this is assumed to impact negatively on adoption of the technologies. Farmers with more experience in cocoa cultivation would be able to apply their cropping experience in the cultivation of cocoa and this would increase their ability to adopt the cocoa technologies".[15] Likewise, Barrientos & Akyere found that there are significant differences in productivity by age of farmers, with older farmers producing lower yields per acre than younger farmers.[16]

On the other hand, some authors have suggested that youth are not interested in cocoa farming and may seek other crop options or non-agricultural livelihood options.[17] The feared implication is that, as one generation passes away, the next generation may not be willing to take over, which would contribute to long-term global supply pressures. The World Health Organisation reports that, in 2015, life expectancy in Ghana was 61 years for men and 64 for women[18] and in Côte d'Ivoire: 52 years for men and 54 for women.[19]

The mean age of cocoa farmers is regularly reported in many studies. However, care needs to be taken in the interpretation of age data to avoid drawing the wrong conclusions about the age of farmers and the future direction of the cocoa sector.

Most household surveys collect information on the age of respondent or household head (or both), rather than the ages of all household members working on cocoa (i.e. 'cocoa farmers'). The respondent is most often the household head, and is also frequently the oldest person in the household. Therefore, the 'average age of cocoa farmers' is skewed upwards by the age of the head. In reality, the head may only be one of several household members contributing to the cultivation of cocoa.

Most studies only report mean age, do not present age distribution, and do not share the raw dataset. Another commonly encountered limitation is that other studies typically do not make a comparison between cocoa and non-cocoa households from within the same geographic areas. In general, it is difficult for other researchers

[15] Aneani, F., Anchirinah, V., Owusu-Ansah, F., Asamoah, M. (2012). Adoption of Some Cocoa Production Technologies by Cocoa Farmers in Ghana. Sustainable Agriculture Research Vol. 1, No. 1; February 2012. Available at http://www.ccsenet.org/journal/index.php/sar/article/view/14550

[16] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/progress/mapping-sustainable-production-in-ghanaian-cocoa

[17] Fountain, A.C. and Hütz-Adams, F. (2015) Cocoa Barometer 2015-USA Edition. Available at http://www.cocoabarometer.org/International_files/Cocoa%20Barometer%202015%20USA.pdf

[18] World Health Organisation (2018). Ghana. Available at http://www.who.int/countries/gha/en/

[19] World Health Organisation (2018). Côte d'Ivoire. Available at http://www.who.int/countries/civ/en/

to interpret the data presented in most reports. We believe it is important to know whether or not there is an issue around aging cocoa farmers and, if so, whether this is specific to cocoa or a more general smallholder farmer phenomena.

We reviewed the reported mean age in several earlier studies (Table 3.3). In Ghana, there does not seem to be any obvious indication that cocoa farmers are older now than in earlier times. One reference expressed concerns about the old age of cocoa farmers as far back as 1998.[20] As far as we can tell, concerns about an aging population of cocoa farmers in Ghana is largely anecdotal.[21] Cocoa farmers (often the household head) surveyed in recent decades may seem relatively old, but there is no evidence the mean age is increasing. Furthermore, we are unaware of a large study that has compared the ages of cocoa and non-cocoa farmers in the same communities

Table 3.3 Mean ages of cocoa farmers (respondents) reported in previous studies, Ghana

Mean age	Region/other	Source	Sample size
55	Eastern Region	Anon (1973) cited in Dormon *et al.* (2004)[22]	103
53	Eastern Region	Boahene *et al.* (1999)[23]	Unknown
55	Eastern Region	Anon (1999) cited in Dormon (2006)[24]	Unknown
~50	Ashanti and Volta regions	Baah & Anchinarah (2010)[25]	300, random
51.5	Ashanti Brong-Ahafo Western Eastern Central Volta	Aneani *et al.* (2011a)[26]	300
50	Eastern, Central, Ashanti, Brong Ahafo, and Western	Hainmueller *et al.* (2011)[27]	3000
51	Ashanti, Western South and Eastern Regions	Barrientos & Akyere (2008)[28]	217
49.5	Ashanti, Eastern, Western	Waarts *et al.* (2013)[29]	385
48.7	11 cocoa districts	Asamoah *et al.* (2013)[30]	637
47.8	Ghana	Tulane University (2015)[31]	1047

[20] MASDAR (1998). Socio-Economic Study of Cocoa Farming in Ghana. Consultancy report, Accra: Ghana Cocoa Board / MASDAR International consultants. UK.

[21] For example, during a stakeholders' workshop to present the results of a national survey on labour use in cocoa (Ministry of Manpower, Youth and Employment, 2008), there was general consensus that the future of Ghana's cocoa is threatened by the country's inability to attract the youth into the sector. See Baah, F et al. (2012). Examining the cocoa farmer-purchasing clerk relationship in Ghana. Global Journal of Science Frontier Research, 12(11-D). Available at https://journalofscience.org/index.php/GJSFR/article/download/552/475/

[22] Dormon, E. N. A., Van Huis, A., Leeuwis, C., Obeng-Ofori, D., & Sakyi-Dawson, O. (2004). Causes of low productivity of cocoa in Ghana: farmers' perspectives and insights from research and the socio-political establishment. NJAS-Wageningen journal of life sciences, 52(3-4), 237-259. Available at: https://www.sciencedirect.com/science/article/pii/S1573521404800162

[23] Boahene, K., Snijders, T. A., & Folmer, H. (1999). An integrated socioeconomic analysis of innovation adoption: the case of hybrid cocoa in Ghana. Journal of Policy Modeling, 21(2), 167-184. Available at: https://www.sciencedirect.com/science/article/pii/S0161893897000707

[24] Dormon, E. N. (2006). From a technology focus to innovation development: the management of cocoa pests and diseases in Ghana. Available at: http://library.wur.nl/WebQuery/wurpubs/fulltext/37758

[25] Baah, F., & Anchirinah, V. (2010). Looking for convergence: Stakeholders' perceptions of cocoa extension constraints in Ghana. Journal of Science and Technology (Ghana), 30(3). Available at: https://www.ajol.info/index.php/just/article/view/64626

[26] Aneani, F., Anchirinah, V. M., Owusu-Ansah, F., & Asamoah, M. (2011a). An analysis of the extent and determinants of crop diversification by cocoa (Theobroma cacao) farmers in Ghana. African Journal of Agricultural Research, 6(18), 4277-4287. Available at: http://www.academicjournals.org/article/article1380813419_Aneani%20et%20al.pdf

[27] Hainmueller, J., Hiscox, M., & Tampe, M. (2011). Sustainable development for cocoa farmers in Ghana. MIT and Harvard University. Available at: https://www.theigc.org/wp-content/uploads/2015/02/Hainmueller-Et-Al-2011-Working-Paper.pdf

[28] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/~/media/CocoaLife/en/download//article/IDS.PDF

[29] Waarts, Y., Ge, L., Ton, G. & van der Meen, J. (2013). A touch of cocoa: Baseline study of six UTZ- Solidaridad cocoa projects in Ghana. LEI report 2013-2014. LEI Wageningen UR. Available at: http://library.wur.nl/WebQuery/wurpubs/fulltext/305316

[30] Asamoah, M., Ansah, F. O., Anchirinah, V., Aneani, F., & Agyapong, D. (2013). Insight into the standard of living of Ghanaian Cocoa Farmers. Greener Journal of Agricultural Sciences, 3(5), 363-370. Available at: http://cocoa.kit-ipp.org/cocoa/sites/default/files/publication/standard%20of%20living%20of%20ghanaian%20cocoa%20farmers.pdf

[31] Tulane University (2015). Survey Research on child labor in West African cocoa producing regions, 2013/14. School of Public Health and Tropical Medicine, Tulane University. July 30 2015. Available at: https://makechocolatefair.org/sites/makechocolatefair.org/files/newsimages/tulane_university_-_survey_research_on_child_labor_in_the_cocoa_sector_-_30_july_2015.pdf

In Côte d'Ivoire, we do not often encounter the same discourse on aging cocoa farmers. In most literature, the average age of the respondent (often the head) is lower than in Ghana. There are a few possible reasons for this, such as the country having a lower average life expectancy, or that there are "traditionally large age differences between husbands and wives (leading to a high number of widows), male mortality from AIDS and war, and male urban migration".[32]

Table 3.4 Mean ages of cocoa farmers (respondents) reported in previous studies, Côte d'Ivoire

Mean age	Region/other	Source	sample size
49	Est, Centre-Ouest, Sud-Ouest	Assiri *et al.* (2009)[33]	800
50, 54, 45	Baoulé, Bakwé, Burkinabé	Tano (2012)[34]	174
46	Côte d'Ivoire	Ingram *et al.* (2014)[35]	708
45	Côte d'Ivoire	Tulane University (2015)[36]	1214
47	Indénié-Djuablin, Nawa, Loh-Djiboua, Haut-Sassandra	Vigneri *et al.* (2016)[37]	918

In this study, we have tried to demystify the question of whether cocoa farmers really are older than non-cocoa farmers, by how much, why, and whether or not this matters.

In Ghana, we find that there is, in fact, a 5.5 year difference in mean age between respondents in cocoa households (50.69 years) and non-cocoa households (45.04 years) *(highly significant)*. Similarly, we observe a five year difference in mean age between household heads from cocoa and non-cocoa households *(highly significant)* (Table 3.5). Analysis of the distribution of respondent age suggests this difference in means is a result of *both* a higher proportion of older respondents of cocoa households and a lower proportion of young respondents of cocoa household.

The reasons for these differences were not studied in detail, however, we have two hypotheses that other researchers may wish to explore further. First, we have heard anecdotes that some people refer to cocoa as 'a retirement job', meaning that it does not require particularly strenuous labour once established, requires relatively low labour days compared with other crops, and hired labourers can manage the cocoa farm. Second, many focus group participants discussed how sharecropping was a common way to get into cocoa farming. This may be a barrier for some young farmers as they may have to save before they can pay the upfront sharecropping fee.

[32] Ingram, V., Waarts, Y., Ge, L., van Vugt, S., Wegner, L., Puister-Jansen, L., Ruf, F., Tanoh, R. (2014). Impact of UTZ certification of cocoa in Ivory Coast; Assessment framework and baseline. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-010. Available at: http://edepot.wur.nl/307584

[33] Assiri, A. A., Yoro, G. R., Deheuvels, O., Kébé, B. I., Keli, Z. J., Adiko, A., & Assa, A. (2009). Les caractéristiques agronomiques des vergers de cacaoyer (# Theobroma cacao# L.) en Côte d'Ivoire. Journal of animal and plant sciences, 2(1), 55-66. Available at: http://agritrop.cirad.fr/555828/

[34] Tano, M. A. (2012). Crise cacaoyère et stratégies des producteurs de la sous-préfecture de Méadji au Sud-Ouest ivoirien (Doctoral dissertation, Université Toulouse le Mirail-Toulouse II). Available at: https://halshs.archives-ouvertes.fr/tel-00713662/

[35] Ingram, V., Waarts, Y., Ge, L., van Vugt, S., Wegner, L., Puister-Jansen, L., Ruf, F., Tanoh, R. (2014). Impact of UTZ certification of cocoa in Ivory Coast; Assessment framework and baseline. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-010. Available at: http://edepot.wur.nl/307584

[36] Tulane University (2015). Survey Research on child labor in West African cocoa producing regions, 2013/14. School of Public Health and Tropical Medicine, Tulane University. July 30 2015. Available at: https://makechocolatefair.org/sites/makechocolatefair.org/files/newsimages/tulane_university_-_survey_research_on_child_labor_in_the_cocoa_sector_-_30_july_2015.pdf

[37] Vigneri, M. and Serra, R. (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at: http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

In general, we find that the average age of Ghanaian respondents is fairly consistent with other studies, which suggests to us that fears that 'the cocoa sector may be running out of cocoa farmers' is unfounded.[38] Instead, we suggest that younger farmers do continue to enter the cocoa sector in sufficient numbers to replace older farmers as they step out. This argument is supported by the fact that the mean age of cocoa famers reported in various studies has remained relatively constant in recent decades.

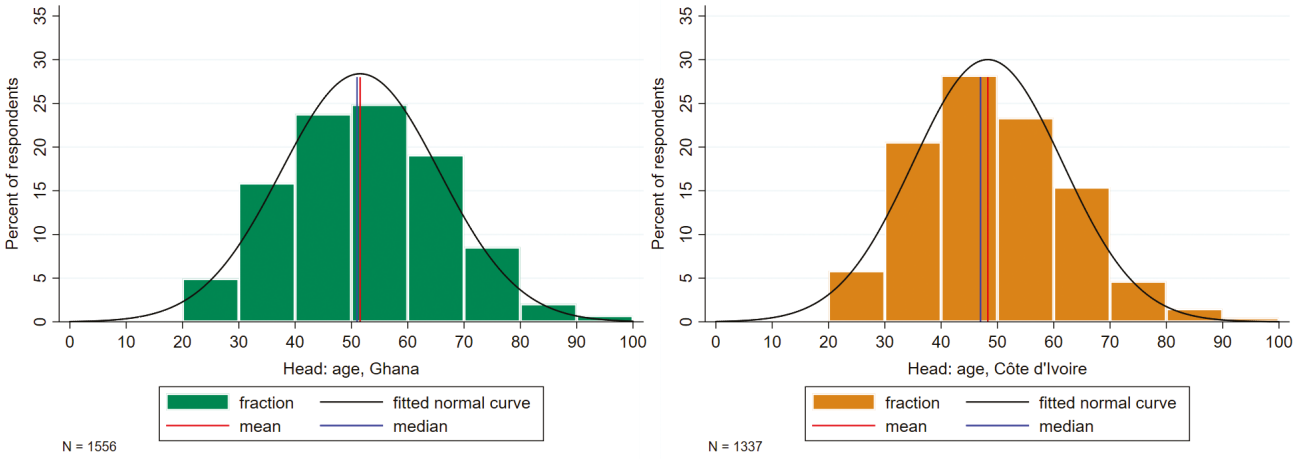
In Côte d'Ivoire, we also observe an age difference of nearly two years between the mean age of cocoa and non-cocoa respondents *(highly significant)* (Table 3.5). However, we find that differences in the mean age of cocoa and non-cocoa household heads is not statistically significant. Likewise, when analysing the distribution of the age of cocoa and non-cocoa respondents, there is no statistical significance Table 3.6.

Table 3.5 Age of respondents and household head (mean years), by cocoa vs non-cocoa household

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
Mean respondent age	50.59	45.04	0.00	***	45.55	43.32	0.00	***
std.error	0.37	0.89			0.45	0.55		
N	1,316	242			888	554		
p1_respondent_age								
Mean household head age	52.34	47.22	0.00	***	50.48	47.77	0.15	
std.error	0.38	0.94			1.43	0.61		
N	1,316	240			830	508		
head_age								

Note: The respondent age includes many respondents who are also head of the household.

Figure 3.1 Age of the household head, distribution, by country



[38] Fountain, A.C. and Hütz-Adams, F. (2015). Cocoa Barometer 2015-USA Edition. Available at http://www.cocoabarometer.org/International_files/Cocoa%20Barometer%202015%20USA.pdf

Table 3.6 Age of respondent (distribution), by cocoa vs non-cocoa household

Age Group	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
Under 17	0%	0%	0.00	***	0%	0%	0.07	*
17-25	2%	6%			6%	8%		
26-35	12%	22%			20%	24%		
36-45	23%	27%			27%	26%		
46-55	28%	23%			24%	24%		
56-65	20%	14%			17%	13%		
66-older	14%	7%			7%	5%		
N	1,316	242			888	554		
age_cat								

Figure 3.2 Age of the household head, distribution, cocoa and non-cocoa households, Ghana

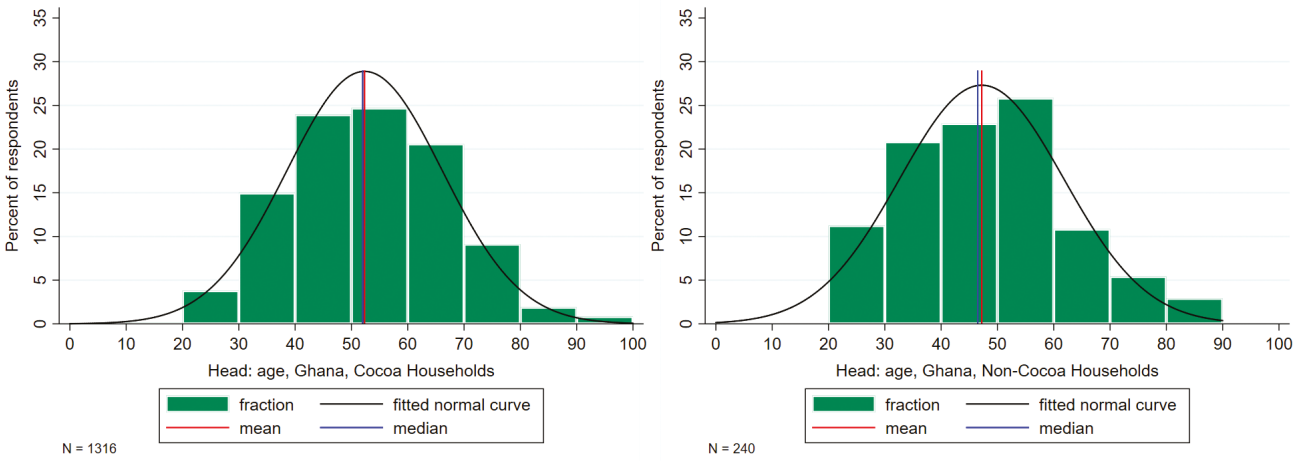
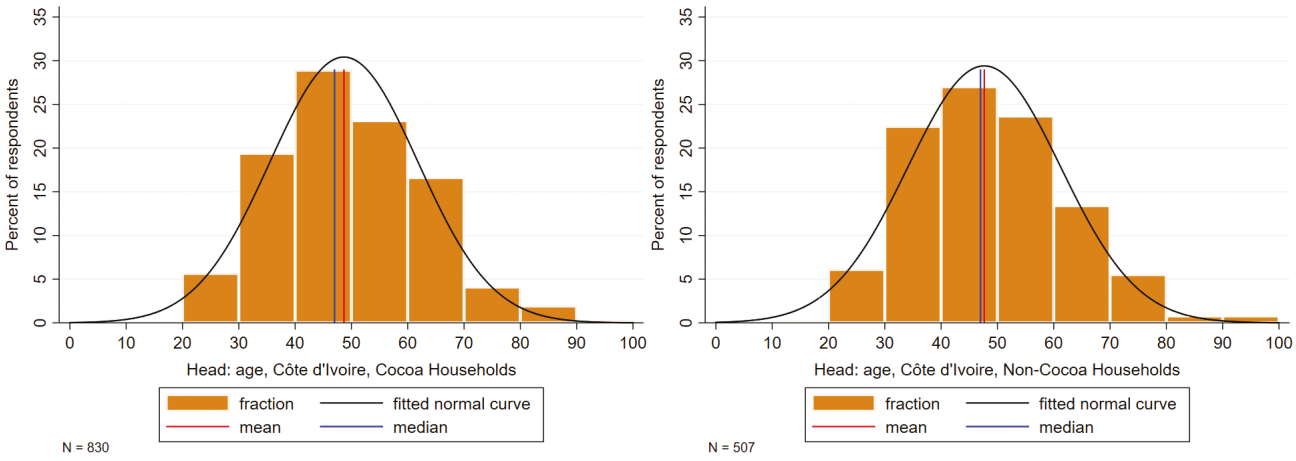


Figure 3.3 Age of the household head, distribution, cocoa and non-cocoa households, Côte d'Ivoire



Some other studies have argued that the age of cocoa farmers is (indirectly) correlated with cocoa yields.[39,40] The theory is that older cocoa farmers make lower investments

[39] Aneani, F., Anchirinah, V. M., Asamoah, M., & Owusu-Ansah, F. (2011b). Analysis of economic efficiency in cocoa production in Ghana. African Journal of Food, Agriculture, Nutrition and Development, 11(1).. Available at https://www.ajol.info/index.php/ajfand/article/view/65877

[40] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/~/media/CocoaLife/en/download//article/IDS.PDF

than younger farmers, adopt new agricultural practices at lower rates, or can no longer optimally perform certain tasks (such as pruning of mistletoe). However, this is countered by others[41] who argue that empirical evidence on the relation between age and innovation is not clear-cut. In this research, we have also run our own analysis based on the age of the household head and, where significant differences are found, these have been reported. It is important to note that several people of different ages may contribute their labour to the household cocoa farm, and could also be considered 'cocoa farmers'.

3.1.2.1 Youth

According to Ghana's National Youth Policy, youth is defined as those between 15-35 years.[42] To compare youth household heads with non-youth household heads we have used the same age definition for both Ghana and Côte d'Ivoire.[43]

In Ghana, 14% of the total sample consisted of 'youth' household heads (N=213). Of these, 73% were cocoa households. This compared with 19% in Côte d'Ivoire (N=252), of which 58% were cocoa households. These relatively small sample sizes of youth cocoa households make it difficult to test many youth-related hypotheses. Therefore, in this report, we have only included youth data for which we found there to be a statistical significance.

As Giuliani *et al.* (2017) note, "Youth remain a highly diverse group of people, with different backgrounds, drivers and experiences leading to varying ideas, challenges and aspirations".[44] Therefore, a more focussed study than this would be required to adequately address youth and non-youth differences in a rigorous way.

3.1.3 Education

Three main indicators of education level are used in literature related to cocoa production in West Africa: i) number of years of completed education;[45,46] ii) type/level of education

[41] E.g. Ruf, F., and Schroth, G. (2015). Introduction—Economic and Ecological Aspects of Diversification of Tropical Tree Crops. In: Ruf , F. & Schröth, G. (Eds) Economics and ecology of diversification. Springer, Dordrecht. Available at: https://link.springer.com/chapter/10.1007/978-94-017-7294-5_1

[42] Ghana Ministry of Youth and Sports. (2010). National Youth Policy of Ghana, Towards an empowered youth, impacting positively on national development. Available at http://www.youthpolicy.org/national/Ghana_2010_National_Youth_Policy.pdf

[43] While Côte d'Ivoire does not provide a definition of youth, the Youth Card is available to all citizens ages 16-35. Youth Policy. (2014). Factsheet: Cote d'Ivoire. Available at http://www.youthpolicy.org/factsheets/country/cote-divoire/

[44] Giuliani et al 2017, 3. Full reference: Giuliani, A., Mengel S., Paisley, C., Perkins, N., Flink, I., Oliveros, O. and Wongtschowski, M (2017) Realities, Perceptions, Challenges and Aspirations of Rural Youth in Dryland Agriculture in the Midelt Province, Morocco. In Sustainability 2017, 9(6), 871. Available at http://www.mdpi.com/2071-1050/9/6/871/htm

[45] Waarts, Y., Ge, L., Ton, G. & van der Meen, J. (2013). A touch of cocoa: Baseline study of six UTZ- Solidaridad cocoa projects in Ghana. LEI report 2013-2014. LEI Wageningen UR. Available at : http://edepot.wur.nl/305316

[46] Vigneri, M., Sera, R. & Cardenas, A.L. (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at : http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

completed;[47,48] and, iii) literacy (i.e. literate vs illiterate).[49,50] In this study, we chose to ask respondents and household heads for level of education they had completed.

Recent studies indicate that cocoa farmers have low literacy rates in Ghana (65% illiterate)[51] and Côte d'Ivoire (56% illiterate).[52] Nevertheless, many authors found that the majority of uncertified cocoa farmers in Ghana have had basic education, meaning farmers have completed primary education and/or junior high school (also called primary and middle school).[53,54] In a research on the impact of certification on cocoa production in Ghana, some authors[55] use the number of years of education as one of the indicators. They found that almost half of farmers received between 7 and 12 years of education, while between 15% and 20% of farmers did not receive any education. No difference between uncertified and certified farmers was found with regard to years of education.[56]

Education levels are an important characteristic because some studies have reported that younger and more educated farmers are, on average, more productive than older farmers and more likely to adopt new farming technologies.[57] Others have argued that there is a positive correlation between being literate and total cocoa income.[58]

In our survey, we gathered data on education attainment of the household head and the school enrolment rate of their children. In addition, we asked about the respondent's ability to read a sentence in English (Ghana) or French (Côte d'Ivoire).

3.1.3.1 Education of household head

Across the whole sample, we found that household heads in Ghana had a generally higher level of educational attainment than those in Côte d'Ivoire. For example, in Ghana, 24% of household heads reported having attained no formal education with a further 12% only attaining primary school education. The most common category of educational attainment in Ghana was Junior high school (JHS), which was attained by 46% of household heads.

[47] FAO (2012). Gender inequalities in rural employment in Ghana: an overview. Gender, Equity, and Rural Employment Division of FAO. Available at: http://www.fao.org/docrep/016/ap090e/ap090e00.pdf

[48] Aneani, F., Anchirinah, V. M., Asamoah, M., & Owusu-Ansah, F. (2011b). Analysis of economic efficiency in cocoa production in Ghana. African Journal of Food, Agriculture, Nutrition and Development, 11(1).. Available at https://www.ajol.info/index.php/ajfand/article/view/65877

[49] Hiscox, M., & Goldstein, R. (2014). Gender Inequality in the Ghanaian Cocoa Sector. Harvard University. Available at: https://www.business-humanrights.org/sites/default/files/webform/2014%20April%2023%20Gender%20inequality%20in%20the%20Ghanean%20cocoa%20sector.%20Assessment%20by%20Harvard%20University_0.pdf

[50] Assiri, A. A., Yoro, G. R., Deheuvels, O., Kébé, B. I., Keli, Z. J., Adiko, A., & Assa, A. (2009). Les caractéristiques agronomiques des vergers de cacaoyer (# Theobroma cacao# L.) en Côte d'Ivoire. Journal of animal and plant sciences, 2(1), 55-66. Available at: http://agritrop.cirad.fr/555828/

[51] This sample included only members of the farmer organisation Kuapa Kokoo Farmers' Union. Nelson, V., Opoku, K., Martin, A., Bugri, J., & Posthumus, H. (2013). Assessing the poverty impact of sustainability standards: Fairtrade in Ghanaian cocoa. London: DfID UK. Available at https://www.gov.uk/dfid-research-outputs/final-report-assessing-the-poverty-impact-of-sustainability-standards-fairtrade-in-ghanaian-cocoa

[52] This included only uncertified famers. Deheuvels, O., Assiri, A. A., Yoro, G. R., Kébé, B. I., Keli, Z. J., Adiko, A., & Assa, A. (2009). Les caractéristiques agronomiques des vergers de cacaoyer (# Theobroma cacao# L.) en Côte d'Ivoire. Journal of animal and plant sciences, 2(1), 55-66. Available at http://m.elewa.org/JAPS/2009/2.1/3.pdf

[53] Hainmueller, J., Hiscox, M., & Tampe, M. (2011). Sustainable development for cocoa farmers in Ghana. MIT and Harvard University. Available at https://www.theigc.org/wp-content/uploads/2015/02/Hainmueller-Et-Al-2011-Working-Paper.pdf

[54] Aneani, F., Anchirinah, V., Owusu-Ansah, F., Asamoah, M. (2012). Adoption of Some Cocoa Production Technologies by Cocoa Farmers in Ghana. Sustainable Agriculture Research Vol. 1, No. 1; February 2012. Available at http://www.ccsenet.org/journal/index.php/sar/article/view/14550

[55] Waarts, Y., Ge, L., Ton, G. & van der Meen, J. (2013). A touch of cocoa: Baseline study of six UTZ- Solidaridad cocoa projects in Ghana. LEI report 2013-2014. LEI Wageningen UR. Available at: http://edepot.wur.nl/305316

[56] Ibid

[57] Oomes, N., Tieben, B., Laven, A., Ammerlaan, T., Appelman, R., Biesenbeek, C. & Buunk, E. (2016). Market concentration and price formation in the global cocoa value chain. SEO Amsterdam Economics. Available at http://www.seo.nl/en/page/article/marktconcentratie-en-prijsvorming-in-de-mondiale-waardeketen-voor-cacao/

[58] Hiscox, M., & Goldstein, R. (2014). Gender Inequality in the Ghanaian Cocoa Sector. Harvard University. Available at https://www.cocoalife.org/~/media/CocoaLife/News%20Articles%20PDF/Ghana%20Gender%20Assessment%20by%20Harvard%20University.pdf

By comparison, a higher proportion of household heads in Côte d'Ivoire had attained no formal education (32%) or only primary school education (34%). A much lower proportion of Côte d'Ivoire heads had completed JHS (21%) *(highly significant)* (Table 3.7).

Table 3.7 Educational attainment of the household head, by country

	Ghana	Côte d'Ivoire	pvalue	sig
No formal education completed	24%	32%	0.00	***
Primary school	12%	34%		
Junior high school (JHS) / middle school	46%	21%		
Senior high school (SHS) A/O level	11%	8%		
University	4%	1%		
Technical college / vocational	2%	1%		
Other, École Franco-arabe / Coranique	1%	2%		
Don't know	0%	0%		
N	1,548	1,458		
head_education				

In Ghana and Côte d'Ivoire, substantial differences in educational attainment were observed between male and female-headed households. For example, in Ghana, 46% of female household heads reported having attained no formal education, compared with 21% of male household heads. Likewise, in Côte d'Ivoire, 50% of female heads reported having attained no formal education, compared with 30% of male heads. Male heads in both countries attained JHS education at approximately twice the rate of female heads *(highly significant)* (Table 3.8). It is important to emphasise that household heads are, on average, 50 years old in Ghana and 45 years old in Côte d'Ivoire (Table 3.5). Therefore, these findings do not reflect the current state of the education system in either country, but rather illustrate educational disparities in past years.

Table 3.8 Educational attainment of the household head, by sex of head

	Ghana female head	Ghana male head	pvalue	sig	Côte d'Ivoire female head	Côte d'Ivoire male head	pvalue	sig
No formal education completed	46%	21%	0.00	***	50%	30%	0.00	***
Primary school	20%	14%			37%	38%		
Junior high school (JHS) / middle school	27%	49%			10%	20%		
Senior high school (SHS) A/O level	3%	10%			1%	7%		
University	1%	3%			1%	1%		
Technical college / vocational	2%	2%			1%	1%		
Other	0%	0%			0%	0%		
École Franco-arable / Coranique	0%	0%			0%	2%		
Don't know	0%	0%			0%	0%		
N	288	1270			157	1323		
p1_respondent_education								

In Ghana, there was found to be no statistical difference in educational attainment between cocoa and non-cocoa household heads. However, in Côte d'Ivoire, the data does show a *highly significant* difference between cocoa and non-cocoa heads (Table 3.9). However, this can be largely explained by lower educational attainment of female heads who less frequently reported producing cocoa as one of their most important crops. This finding should not be interpreted as cocoa production affecting the educational attainment of household heads in Côte d'Ivoire.

Table 3.9 Educational attainment of the household head, by cocoa vs non-cocoa household

	Ghana cocoa head	Ghana non-cocoa head	pvalue	sig	Côte d'Ivoire cocoa head	Côte d'Ivoire non-cocoa head	pvalue	sig
No formal education completed	24%	26%	0.30		28%	39%	0.00	***
Primary school	13%	10%			36%	32%		
Junior high school (JHS) / middle school	47%	42%			23%	17%		
Senior high school (SHS) A/O level	10%	14%			8%	8%		
University	3%	5%			2%	1%		
Technical college / vocational	2%	3%			1%	1%		
Other	1%	0%			0%	0%		
École Franco-arabe / Coranique	0%	0%			2%	3%		
Don't know	0%	0%			0%	0%		
N	1311	237			897	561		
head_education								

Regional differences for the education level of the head of the household are illustrated in Table 3.10 and Table 3.11 for Ghana and Côte d'Ivoire, respectively (both *highly significant*). In Brong Ahafo, and in the Western region of Ghana, the percentage of head of households without any formal education was respectively 31 and 28%, respectively, compared to 11% in the Eastern region. In Côte d'Ivoire, the district of Lacs and Yamoussoukro had relatively high percentages of household heads without any formal education (44% and 43% respectively). The district of Lagunes stood out for its relatively high percentages of head of households with JHS or SHS (respectively 31% and 18%).

Table 3.10 Education level of the head of the household in different regions in Ghana

	Ashanti	Brong Ahafo	Central	Eastern	Western	pvalue	sig
no formal education completed	22%	31%	25%	11%	28%	0.00	***
Primary school	15%	8%	14%	11%	13%		
Junior high school (JHS) / middle school	45%	43%	36%	57%	45%		
Senior high school (SHS) A/O level	14%	10%	14%	10%	9%		
University	2%	3%	3%	6%	4%		
Technical college / vocational	2%	4%	4%	3%	2%		
Other	0%	0%	3%	2%	0%		
Don't know	0%	0%	0%	0%	0%		
N	316	267	69	256	640		
head_education							

Note: p-value from a Chi-squared test

Table 3.11 Education level of the head of the household in different regions in Côte d'Ivoire

	Bas-Sassandra	Comoe	Yamouss-oukro	Goh-Djiboua	Lacs	Lagunes	Montagnes	Sassandra-Marahoue	Zanzan	pvalue	sig
no formal education completed	28%	41%	43%	31%	44%	12%	29%	19%	37%	0.00	***
Primary school	42%	32%	33%	23%	28%	35%	35%	45%	37%		
Junior high school (JHS) / middle school	17%	10%	13%	19%	19%	31%	24%	27%	17%		
Senior high school (SHS) A/O level	7%	10%	8%	11%	6%	18%	6%	7%	4%		
University	1%	3%	1%	2%	1%	3%	1%	0%	1%		
Technical college / vocational	2%	0%	2%	1%	1%	1%	0%	0%	1%		
Other	3%	3%	0%	12%	1%	0%	4%	1%	4%		
Don't know	0%	0%	0%	0%	0%	0%	0%	0%	0%		
N	151	97	89	131	356	125	139	244	126		
head_education											

Note: p-value from a Chi-squared test

3.1.3.2 Education of children and youth

Respondents were also asked to report on the school attendance status of all their children aged between 5 and 14 years. In Ghana, 98% of respondents reported that all of their children aged 5-14 years currently attend school. There were found to be no statistical differences between reported boy and girl attendance, nor between attendance of children in cocoa households compared with non-cocoa households.

However, in Côte d'Ivoire, only 80% of respondents reported that all boys in the household aged 5-14 year attended school. Furthermore, 77% of cocoa households reported all girls currently attend school compared with 82% of non-cocoa households *(not statistically significant)*. (Table 3.12).

Table 3.12 Percent of households where all boys and girls aged 5 to 14 are currently attending school, by cocoa vs non-cocoa households

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
All boys in the household attending school	98%	97%	0.74		80%	80%	0.94	
std.error	1%	2%			2%	2%		
N	734	112			576	335		
male_children_5_14_school								
All girls in the household attending school	98%	98%	0.81		77%	82%	0.13	
std.error	1%	1%			2%	2%		
N	647	111			492	325		
female_children_5_14_school								

Note: The question was asked: 'Are all household boys ages 5 to 14 currently attending school?' and 'Are all household girls ages 5 to 14 currently attending school?' Only households who previously indicated having children in these age groups were asked these questions.

In Ghana, youth (those aged 15-35) have a slightly higher educational attainment than non-youth. In Côte d'Ivoire, this difference is more marked, particularly at the higher primary school attainment (Table 3.13) (*highly significant*). Additionally, in both countries, we see that the percentage of youth completing senior high school and university attainment is slightly higher than non-youth.

Table 3.13 Education level of heads belonging to youth, versus non-youth

Head: Education level	Ghana non-youth	Ghana youth	pvalue	sig	Côte d'Ivoire non-youth	Côte d'Ivoire youth	pvalue	sig
no formal education completed	25%	22%	0.02	**	32%	22%	0.00	***
Primary school	13%	10%			34%	43%		
Junior high school (JHS) / middle school	46%	45%			22%	18%		
Senior high school (SHS) A/O level	10%	13%			8%	11%		
University	3%	8%			1%	3%		
Technical college / vocational	3%	2%			1%	1%		
Other	1%	0%			3%	2%		
Don't know	0%	0%			0%	0%		
N	1334	212			1076	251		
head_education								

Note: p-value from a Chi-squared test

3.1.3.3 Literacy

In Ghana, 43% of the respondents said that they were able to read a sentence in English, while in Côte d'Ivoire, 53% of the respondents reported being able to read a sentence in French. However, Table 3.14 shows that there are significant gender differences. In Ghana, only 19% of female respondents were able to read in English, versus 56% of the male respondents.

In Côte d'Ivoire, only 32% female respondents reported being able to read a sentence in French, compared with 64% of male respondents. However, it is interesting to note that the percentage of female respondents in Côte d'Ivoire able to read French is higher than the percentage of women able to read English in Ghana, despite reporting lower educational attainment.

Table 3.14 Percent of respondents able to read a sentence in English/French, by sex of the respondent

	Ghana female resp	Ghana male resp	pvalue	sig	Côte d'Ivoire female resp	Côte d'Ivoire male resp	pvalue	sig
mean	19%	56%	0.00	***	32%	64%	0.00	***
std.error	2%	2%			2%	2%		
N	538	1,022			498	987		
p1_respondent_read								

Note: p-value from a one-way ANOVA test

Table 3.15 shows that only in Côte d'Ivoire is there a *highly significance* difference between cocoa-households and non-cocoa households. In Côte d'Ivoire, the percentage of cocoa households that is able to read in French is 59%, while for non-cocoa households this is only 45%.

Table 3.15 Percent of respondents able to read a sentence in English/French, by cocoa and non-cocoa household

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
mean	44%	40%	0.32		59%	45%	0.00	***
std.error	1%	3%			2%	2%		
N	1318	242			910	575		
p1_respondent_read								

Note: p-value from a one-way ANOVA test

Table 3.16 and Table 3.17 show that there are large regional differences in respondents' ability to read in English or French. In Ghana, the Eastern region and Ashanti region show the highest level of literacy. In Côte d'Ivoire, the Lagunes district stands out with 81% of respondents able to read French. In Côte d'Ivoire, in Yamoussoukro, the percentage of respondents able to read French is lowest, with only 34%. These regional differences in literacy levels correspond with the regional differences we found in relation to the received education of the household heads.

Table 3.16 Percent of respondents able to read a sentence in English in Ghana, per region

	Ashanti	Brong Ahafo	Central	Eastern	Western	pvalue	sig
mean	46%	38%	36%	58%	39%	0.00	***
std.error	3%	3%	6%	3%	2%		
N	317	270	72	256	645		
p1_respondent_read							

Note: p-value from a one-way ANOVA test

Table 3.17 Percent of respondents able to read a sentence in French in Côte d'Ivoire, per district

	Bas-Sassandra	Comoe	Yamous-soukro	Goh-Djiboua	Lacs	Lagunes	Montagnes	Sassandra-Marahoue	Zanzan	pvalue	sig
mean	49%	54%	34%	51%	46%	81%	52%	61%	55%	0.00	***
std.error	4%	5%	5%	4%	3%	4%	4%	3%	4%		
N	159	97	90	136	358	126	142	251	126		
p1_respondent_read											

Note: p-value from a one-way ANOVA test

3.1.4 Marital status

Many reports on cocoa in Ghana and Côte d'Ivoire give some attention to gender differences between men and women.[59,60,61] The role of marital status in cocoa producing households is investigated to a lesser extent, even though a number of authors found marital status to be a relevant indicator.[62,63,64] For example, it is argued that marriage gives women access to land and men access to labour.[65]

In a recent study authors identify four different statuses: not married (single), married, divorce/separated, and widowed.[66] In addition, the Ghana Statistical Service[67] and the Ivorian Ministry of Agriculture[68] make a distinction between formal and informal marriages. An informal marriage, also known as 'concubinage' or 'cohabitation', is not recognised as an official marriage in Ghana or in Côte d'Ivoire.[69] Another form of marital status is a polygamous marriage, where a man has multiple wives (never the other way around).

In our study, the majority of respondents in Ghana (79%) and Côte d'Ivoire (80%) reported being married or in concubinage. Concubinage was only reported in Côte d'Ivoire.[70] However, *highly significant* differences were observed with regards to the sex of the household head in both countries. A substantially higher proportion of male heads in Ghana were married (91%) compared with female heads (24%). Similarly, in Côte d'Ivoire, 86% of male heads reported being married or in concubinage, compared with 27% of female heads *(highly significant)*. This is because it is most common for married men to self-identify as the 'household head'.

It is important to note that female household heads were found to be a mix of single, divorced and widowed women in Ghana and Côte d'Ivoire. Furthermore, around a quarter of female heads in both countries also reported being married or in concubinage, but we are unsure whether these women consider themselves to

[59] Waarts, Y., Ge, L., Ton, G. & van der Meen, J. (2013). A touch of cocoa: Baseline study of six UTZ- Solidaridad cocoa projects in Ghana. LEI report 2013-2014. LEI Wageningen UR. Available at http://edepot.wur.nl/305316

[60] Source: CLP survey; Empowering Women and Fighting Poverty: Cocoa and Land Rights in West Africa: International Food and Policy Research Institute; Dalberg analysis

[61] Barrientos, S.W & Asenso Akyere, K. (2008). Mapping sustainable production in Ghanaian cocoa, Report to Cadbury. Institute of Development Studies & University of Ghana. Available at https://www.cocoalife.org/progress/mapping-sustainable-production-in-ghanaian-cocoa

[62] Fountain, A.C. and Hütz-Adams, F. (2015). Cocoa Barometer 2015-USA Edition. Available at http://www.cocoabarometer.org/International_files/Cocoa%20Barometer%202015%20USA.pdf

[63] Takane, T. (2000). Incentives embedded in institutions: the case of share contracts in Ghanaian cocoa production. The Developing Economies, 38(3), 374-397. Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.1746-1049.2000.tb00883.x/full

[64] Higgins, T., & Fenrich, J. (2012). Legal Pluralism, Gender, and Access to Land in Ghana. Fordham Environmental Law Review, 7-21. Available at: http://www.jstor.org/stable/44175842

[65] Kolavalli, S., & Vigneri, M. (2018). The cocoa coast: The board-managed cocoa sector in Ghana. Intl Food Policy Res Inst.. Available at : http://www.ifpri.org/publication/cocoa-coast-board-managed-cocoa-sector-ghana

[66] Vigneri, M. and Serra, R. (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at: http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

[67] Ghana Statistical Service (2015). Ghana poverty mapping report. Available at : http://www.statsghana.gov.gh/docfiles/publications/POVERTY%20MAP%20FOR%20GHANA-05102015.pdf

[68] République de la Côte d'Ivoire (2009). Evaluation approfondie de la sécurité alimentaire des ménages ruraux en Côte d'Ivoire. http://www.ins.ci/n/templates/docss/secualim_ruraux.pdf

[69] Kumasi Metropolitan Assembly (2017). Marriage services. Available at: http://www.kma.gov.gh/kma/?marriage-services&page=5354

[70] This does not mean that in Ghana this kind of informal marriage does not exist. However, it was not included as an option in the survey. Only by the time the survey was tested in Cote d'Ivoire, it was decided to include this type of marriage as a category.

be the sole head or co-head of the household (Table 3.18). This diversity of marital status may be important to keep in mind as we describe differences between male and female-headed households throughout the report. Certainly, female-headed households should not be thought of as a relatively homogenous group of older, widowed women.

Table 3.18 Respondent marital status, by sex of household head

	Ghana female head	Ghana male head	pvalue	sig	Côte d'Ivoire female head	Côte d'Ivoire male head	pvalue	sig
Single	12%	4%	0.00	***	30%	10%	0.00	***
Married/Concubinage	24%	91%			27%	86%		
Divorced	23%	3%			10%	1%		
Widowed	40%	2%			34%	3%		
Don't know	0%	0%			0%	0%		
N	287	1,270			157	1319		
p1_respondent_marital								

3.1.5 Leadership positions

Social relations can play a major role in facilitating or constraining farmers in accessing inputs and services. Previous research[71] shows that in Ghana there is a significant positive correlation between leadership, ownership and productivity levels. According to other sources this correlation can also be negative if fulfilling leadership tasks take up a lot of time. To be able to capture how ones position in the community can influence livelihood choices and options, we asked survey respondents whether or not they held any kind of leadership position in their community.

This question was also included so as to be able to distinguish leaders from non-leaders in the analysis. Whilst considerable care was taken during random sampling of communities, we had some concerns that uninvited leaders may turn up to research meetings. We thought it would be unwise to turn leaders away from attending the research due to their status. However, in practice, we had few difficulties in this regard.

We were surprised how many respondents self-identified as leaders, in both countries. In Ghana, more men (37%) than women (14%) self-identified as a leader *(highly significant)*. Likewise, in Côte d'Ivoire, a higher proportion of men (37%) than women (14%) self-identified as a leader *(highly significant)* (Table 3.19). In both countries, the most common reported category of leader was 'other'. We are unsure about what constitutes 'other' beyond the many leadership categories provided.

[71] Laven, A. (2010). The risks of inclusion: Shifts in governance processes and upgrading opportunities for cocoa farmers in Ghana. Amsterdam: KIT. Available at: https://pure.uva.nl/ws/files/1437472/77981_18.pdf

'Elder' and 'church/mosque leader' were among the most common leadership categories in Ghana, while 'church/mosque leader' and 'opinion leader' were the most common in Côte d'Ivoire.

Table 3.19 shows that fewer female respondents reported holding leadership positions than male respondents. The roles of elder, opinion leader, chief farmer and village leader were reportedly only held by male respondents. In both Ghana and Côte d'Ivoire, leaders were found to be, on average, 3.5 years older than non-leaders (*highly significant*). This is not surprising as leadership is often associated with seniority and experience.

Table 3.19 Respondent holds a leadership position, by sex of respondent

	Ghana female resp	Ghana male resp	pvalue	sig	Côte d'Ivoire female resp	Côte d'Ivoire male resp	pvalue	sig
No / none	86%	63%	0.00	***	88%	63%	0.00	***
Other	3%	11%	0.00	***	5%	17%	0.00	***
Elder	1%	8%	0.00	***	0%	1%	0.04	**
Church / mosque leader	4%	8%	0.01	**	0%	5%	0.00	***
Opinion leader	0%	5%	0.00	***	0%	6%	0.00	***
Chief farmer	0%	3%	0.00	***	0%	1%	0.02	**
Village chief	0%	2%	0.00	***	0%	2%	0.00	***
Other association leader	1%	2%	0.08	*	2%	3%	0.38	
Purchasing clerk	0%	1%	0.01	**	0%	0%	0.48	
Assembly man/women	0%	1%	0.06	*	0%	0%		
Lead farmer	0%	1%	0.04	**	0%	0%		
Farmer organisation leader	0%	1%	0.26		1%	1%	0.66	
Extension officer / trainer	0%	0%	0.15		0%	0%	0.48	
Queen mother	1%	0%	0.01	**	0%	0%		
Women's leader	4%	0%	0.00	***	4%	0%	0.00	***
Tribe chief	0%	0%			0%	0%	0.32	
Canton chief	0%	0%			0%	0%		
Youth president	0%	0%			0%	3%	0.00	***

3.1.6 Migration

A number of earlier studies looked at migration in cocoa growing countries and the position of migrants.[72,73,74] These describe how the planting of cocoa is historically linked with migration. The Eastern region was the first 'cocoa frontier' and the first to experience the influx of migrants when cocoa production began around 1880.

[72] Ruf, F., Schroth, G., & Doffangui, K. (2015). Climate change, cocoa migrations and deforestation in West Africa: What does the past tell us about the future?. Sustainability Science, 10(1), 101-111. Available at: https://link.springer.com/article/10.1007/s11625-014-0282-4

[73] Knudsen, M. H., & Agergaard, J. (2015). Ghana's cocoa frontier in transition: the role of migration and livelihood diversification. Geografiska Annaler: Series B, Human Geography, 97(4), 325-342. Available at: http://onlinelibrary.wiley.com/doi/10.1111/geob.12084/full

[74] Hill, P. 1963. The Migrant Cocoa-Farmers of Southern Ghana. Cambridge: University Press. Available at https://www.questia.com/library/3137384/the-migrant-cocoa-farmers-of-southern-ghana-a-study

The cocoa frontier shifted from the Eastern Region to the Ashanti Region and Brong Ahafo in the 1940s. When most land in the Eastern and other regions was in use, and production started to decline, migration shifted to the Western Region in the 1980s.[75] According to a recent study[76] the Western region is currently still taking in most migrants (of the cocoa producing regions) as it is the last region to open up its virgin forests to cocoa production.

In Côte d'Ivoire, we see similar patterns, where cocoa production expanded progressively from east to west. The South Western area of Côte d'Ivoire, around San Pédro, is currently seen as the best region for cocoa production, mostly due to its climatic suitability in terms of rainfall.[77] It is argued that the rapid increase in cocoa production in Côte d'Ivoire between 1930 and 2010 was made possible by the influx of hundreds of thousands migrants from the Savannah.[78] In Côte d'Ivoire, migrants were encouraged by high cocoa prices and favourable migration policies from the country's first president, Félix Houphouet-Boigny, making land acquisition easier. In Ghana, migration has largely been internal, whereas in Côte d'Ivoire migration has been internal and from neighbouring Burkina Faso and Mali.[79]

A previous study[80] discusses some of the differences between Ivorian migrants, and immigrants who came to Côte d'Ivoire from Burkina Faso and Mali. According to the authors, transnational immigrants are much worse off than their Ivorian counterparts. They argue that transnational immigrants are often poorly educated, do not speak the local language and rely on non-permanent work. The workers often receive wages far below the national minimum wage.[81] Furthermore, the children of migrant workers often join their parents in Côte d'Ivoire and are unable to attend school due to language barriers or lack of income.[82] Another study reports similar findings with low literacy rates among Burkinabé migrants in Côte d'Ivoire.[83] Other authors, on the other hand, report more positively with regard to migrants, namely that migrants own farms that are generally larger than that of autochthones (indigenous people) (for Côte d'Ivoire).[84] Finally, a study found that, overall, migrant farmers more often opt for zero-shade cocoa production than autochthone farmers.[85] Zero-shade production systems are associated with higher yields and higher net returns in the short term.[86] Some

[75] COCOBOD (2000) Ghana Cocoa Board Handbook. Accra: The Ghana Cocoa Board

[76] Knudsen, M. H., & Agergaard, J. (2015). Ghana's cocoa frontier in transition: the role of migration and livelihood diversification. Geografiska Annaler: Series B, Human Geography, 97(4), 325-342. Available at: http://onlinelibrary.wiley.com/doi/10.1111/geob.12084/full

[77] Ruf, F., Schroth, G., & Doffangui, K. (2015). Climate change, cocoa migrations and deforestation in West Africa: What does the past tell us about the future?. Sustainability Science, 10(1), 101-111. Available at: https://link.springer.com/article/10.1007/s11625-014-0282-4

[78] ibid

[79] ibid

[80] Lambert, A., Gearhart, J. McGill, A. & Wrinkle, H. (2014). The Fairness Gap: Farmer incomes and root cause solutions to ending child labor in the cocoa industry. International Labour Rights Forum, Washington D.C. Available at: https://www.laborrights.org/publications/fairness-gap

[81] ibid

[82] ibid

[83] Tano, M. A. (2012). Crise cacaoyère et stratégies des producteurs de la sous-préfecture de Méadji au Sud-Ouest ivoirien (Doctoral dissertation, Université Toulouse le Mirail-Toulouse II).. Available at: https://halshs.archives-ouvertes.fr/tel-00713662/

[84] Smith-Dumont, E., Gnahoua, G. M., Ohouo, L., Sinclair, F. L., & Vaast, P. (2014). Farmers in Côte d'Ivoire value integrating tree diversity in cocoa for the provision of ecosystem services. Agroforestry systems, 88(6), 1047-1066. Available at : https://link.springer.com/article/10.1007/s10457-014-9679-4

[85] Ruf, F. O. (2011). The myth of complex cocoa agroforests: the case of Ghana. Human Ecology, 39(3), 373. Available at : https://link.springer.com/article/10.1007/s10745-011-9392-0

[86] ibid

studies also suggest a relationship between ethnic groups and diet, pointing out that, in Côte d'Ivoire, migrants rely more on rice compared to natives.[87]

In our study, respondents were asked about their migration background. We chose to define a 'migrant' as one who was born outside of the region where they now live. This regional definition was chosen because district boundaries sometimes change (and hence may cause confusion), and because so few respondents in the sample were born in a different country.

In Ghana, 25% of respondents from cocoa households reported being born outside of the region where they currently live. A slightly higher proportion of respondents from non-cocoa households are migrants (32%) *(significant)* (Table 3.20). Less than 1% of all Ghanaian respondents reported being born outside the country.

In Côte d'Ivoire, 17% of respondents from cocoa households reported being born in a different region to where they now live, compared with 9% of non-cocoa households *(highly significant)* (Table 3.20). Furthermore, in Côte d'Ivoire, 9% of cocoa households and 3% of non-cocoa households reported being born in another country *(highly significant)*.

Table 3.20 Percent of migrants who are cocoa who are migrants from another region, by country

	Ghana cocoa	Ghana non-cocoa	Pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
Percent of respondents who are migrants from another region	25%	32%	0.04	**	17%	9%	0.00	***
std.error	1%	3%			1%	1%		
N	1318	242			910	575		
migrant								

Note: p-value from a one-way ANOVA test

In Ghana, most migrants in our sample live currently in the Western region (37%) and Brong-Ahafo (37%). In Côte d'Ivoire, the highest proportion of migrants in our sample live in Bas-Sassandra.

Table 3.21 Proportion of migrants from another region, by region in Ghana

	Ashanti	Brong Ahafo	Central	Eastern	Western	pvalue	sig
mean	13%	37%	18%	7%	37%	0.00	***
std.error	2%	3%	5%	2%	2%		
N	317	270	72	256	645		
migrant							

Note: p-value from a one-way ANOVA test

[87] FLA (2015). Evaluer la situation actuelle des femmes et des jeunes agriculteurs et l'état nutritional de leurs familles dans deux communautés productrice de cacao en Côte d'Ivoire. Rapport preparé par Fair Labour Association, Juillet 2015. Available at : http://www.fairlabor.org/sites/default/files/documents/reports/femmes_et_des_jeunes_nutrition_dans_communautes_de_dacao_juillet_2015.pdf

Table 3.22 Proportion of migrants from another region, by district in Côte d'Ivoire

	Bas-Sassandra	Comoe	Yamous-soukro	Goh-Djiboua	Lacs	Lagunes	Montagnes	Sassandra-Marahoue	Zanzan	pvalue	sig
mean	41%	16%	1%	27%	7%	3%	23%	11%	3%	0.00	***
std.error	4%	4%	1%	4%	1%	2%	4%	2%	2%		
N	159	97	90	136	358	126	142	251	126		
migrant											

Note: p-value from a one-way ANOVA test

While migrant data is interesting in itself, we have also disaggregated a number of data points in the research by migrant status. This disaggregation will be revisited throughout the report with regards to land tenure and other statistically significant variables.

3.1.7 Household composition

A large household can be beneficial for cocoa households as, depending on the age of household members, they may be able to rely more on household labour than hired labour.[88] On the other hand, a large household can also mean a higher number of dependants, which increases the overall living costs of a household.[89]

The reported household size depends, to a large extent, on the definition of a 'household'. There are different definitions in use: "the number of people the farmer takes care of",[90] "number of people to feed"[91] or "the number of family members living on the farm".[92]

The average household size in Ghana is frequently reported to be between 5 and 6.[93,94] However, in Côte d'Ivoire, the average household size varies substantially. Several authors give an average household size of 11[95,96], with Maytak[97] reporting household sizes ranging from 7 to 13. Several others give much lower estimations.

[88] Anang, B. T., Adusei, K., & Mintah, E. (2011). Farmers' assessment of benefits and constraints of Ghana's cocoa sector reform. Current research journal of social sciences, 3(4), 358-363. Available at : http://www.worldcocoafoundation.org/wp-content/uploads/files_mf/anang2011.pdf

[89] Fountain, A.C. and Hütz-Adams, F. (2015) Cocoa Barometer 2015-USA Edition. Available at http://www.cocoabarometer.org/International_files/Cocoa%20Barometer%202015%20USA.pdf

[90] Ingram, V., Waarts, Y., Ge, L., van Vugt, S., Wegner, L., Puister-Jansen, L., Ruf, F., Tanoh, R. (2014). Impact of UTZ certification of cocoa in Ivory Coast; Assessment framework and baseline. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-010. Available at: http://edepot.wur.nl/307584

[91] Varlet, F. & Kouamé, G. (2013). Étude de la production de cacao en zone riveraine du parc national de Taï. Deutsche Gesellschaft für Internationalle Zusammenarbeit (GIZ) and Ministère de l'Agrilculture de la Côte d'Ivoire.

[92] Maytak, L. (2014). Report on Farm Level Sustainability of Cocoa in Côte d'Ivoire: A Synthesis of Five Studies.

[93] Waarts, Y., Ge, L., Ton, G. & van der Meen, J. (2013). A touch of cocoa: Baseline study of six UTZ- Solidaridad cocoa projects in Ghana. LEI report 2013-2014. LEI Wageningen UR. Available at: http://library.wur.nl/WebQuery/wurpubs/fulltext/305316

[94] Nelson, V., Opoku, K., Martin, A., Bugri, J., & Posthumus, H. (2013). Assessing the poverty impact of sustainability standards: Fairtrade in Ghanaian cocoa. London: DfID UK. Available at https://www.gov.uk/dfid-research-outputs/final-report-assessing-the-poverty-impact-of-sustainability-standards-fairtrade-in-ghanaian-cocoa

[95] Ingram, V., Waarts, Y., Ge, L., van Vugt, S., Wegner, L., Puister-Jansen, L., Ruf, F., Tanoh, R. (2014). Impact of UTZ certification of cocoa in Ivory Coast; Assessment framework and baseline. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-010. Available at: http://edepot.wur.nl/307584

[96] Varlet, F. & Kouamé, G. (2013). Étude de la production de cacao en zone riveraine du parc national de Taï. Deutsche Gesellschaft für Internationalle Zusammenarbeit (GIZ) and Ministère de l'Agrilculture de la Côte d'Ivoire.

[97] Maytak, L. (2014). Report on Farm Level Sustainability of Cocoa in Côte d'Ivoire: A Synthesis of Five Studies.

Vigneri and Serra[98] report an average household size of only 6.21. A recent large-scale study by CGAP finds that an average number of members in a rural Ivoirian household is 5.66.[99] Furthermore, a 2015 Household Lifecycle Survey by the National Institute of Statistics reports that 31.7% of rural households have less than 3 members, 45.3% have between 4 and 6 members, and only 23% of rural households have more than 6 members.[100]

In our research, we were sceptical about the accuracy of some of these figures, particularly in Côte d'Ivoire. From prior experience, we knew that respondents sometimes report family members as household members, even if they don't usually live in the same house or compound, and may even live in another village or town. Such cases have the effect of increasing the mean household size.

In our household survey, we first asked *"What is the total number of members in your household?"* and recorded this value. However, we know that sometimes respondents interpret 'household' as 'family', or that enumerators may accidently translate to 'family'. Therefore, we asked a follow-up question: *"Of those, how many members usually live in your compound/house?"* As expected, fewer household members were found to actually live in the same house.

Using the second value of household members who usually live in the same house or compound, the mean household size in Ghana was 5.77 members. In Côte d'Ivoire, the mean number of household members was 6.79 *(highly significant)*(Table 3.23).

We should also consider the distribution of household sizes in both countries. This shows that, in Côte d'Ivoire, a left-skewed distribution with a long tail of large households has pulled up the average, whereas the Ghanaian sample is nearer to a normal distribution. In fact, the median household size is 6 in both countries. The finding that Ghanaian households are smaller than Ivorian households is consistent with most other studies.

[98] Vigneri, M. and Serra, R. (2016). Researching the Impact of Increased Cocoa Yields on the Labour Market and Child Labour Risk in Ghana and Côte d'Ivoire. ICI Labour market research study. Available at: http://www.cocoainitiative.org/wp-content/uploads/2016/12/market_research_full_web.pdf

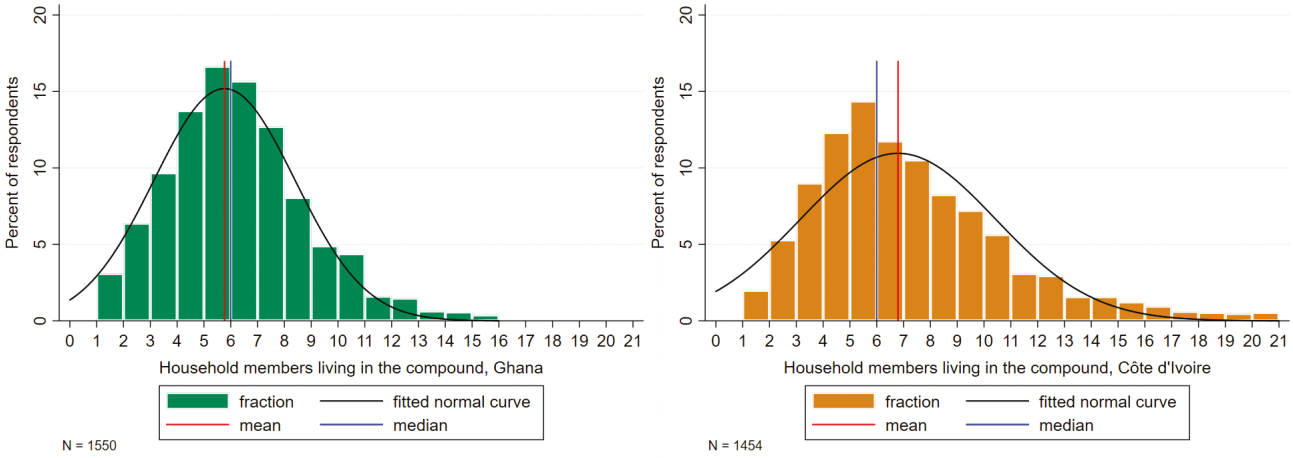
[99] CGAP. (2016). Côte d'Ivoire - CGAP Smallholder Household Survey 2016, Building the Evidence Base on the Agricultural and Financial Lives of Smallholder Households. Report available at http://www.cgap.org/sites/default/files/Working-Paper-Survey-and-Segmentation-Smallholders-Coted%27Ivoire-Jul-2017.pdf Database available at http://microdata.worldbank.org/index.php/catalog/2789/get_microdata

[100] Institut National de la Statistique. (2015). Enquête Niveau de Vie des Ménages 2015, rapport définitif. Available at http://www.ins.ci/n/templates/docss/env2015.pdf p.28

Table 3.23 Household, mean number of members in the household, by country

	Ghana	Côte d'Ivoire	pvalue	sig
Mean	5.77	6.79	0.00	***
Males > 65	0.15	0.13	0.25	
Females > 65	0.12	0.17	0.00	***
Males 15-65	1.62	1.76	0.00	***
Females 15-65	1.65	1.76	0.01	**
Boys 5-14	0.87	1.10	0.00	***
Girls 5-14	0.78	0.96	0.00	***
Boys 0-4	0.29	0.47	0.00	***
Girls 0-4	0.28	0.43	0.00	***
N	1550	1454		

Figure 3.4 Number of household members, distribution, by country



Small but significant differences were found between cocoa and non-cocoa households in Ghana and Côte d'Ivoire. In both countries, cocoa households were slightly larger on average than non-cocoa households. In Ghana, cocoa households had an average of 5.85 persons, compared with 5.30 persons in non-cocoa households *(highly significant)*. In Côte d'Ivoire, an average of 6.98 persons lived in each household compared with 6.51 persons in non-cocoa households *(significant)* (Table 3.24).

Table 3.24 Number of household members, by cocoa vs non-cocoa households

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
Mean	5.85	5.30	0.00	***	6.98	6.51	0.02	**
Males > 65	0.17	0.06	0.00	***	0.14	0.13	0.47	
Females > 65	0.13	0.08	0.03	**	0.16	0.20	0.06	*
Males 15-65	1.63	1.60	0.73		1.85	1.61	0.00	***
Females 15-65	1.66	1.60	0.40		1.80	1.70	0.12	
Boys 5-14	0.90	0.69	0.00	***	1.14	1.04	0.11	
Girls 5-14	0.78	0.78	0.94		0.95	0.99	0.55	
Boys 0-4	0.30	0.20	0.01	**	0.48	0.45	0.41	
Girls 0-4	0.28	0.30	0.59		0.45	0.39	0.15	
N	1310	240			889	565		

Figure 3.5 Number of household members, distribution, by cocoa vs non-cocoa households, Ghana

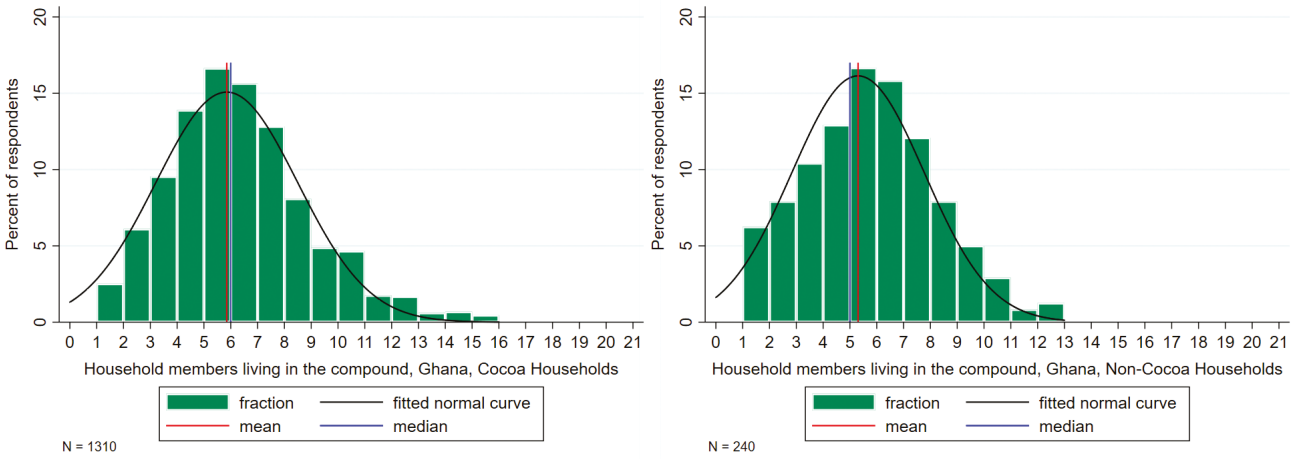
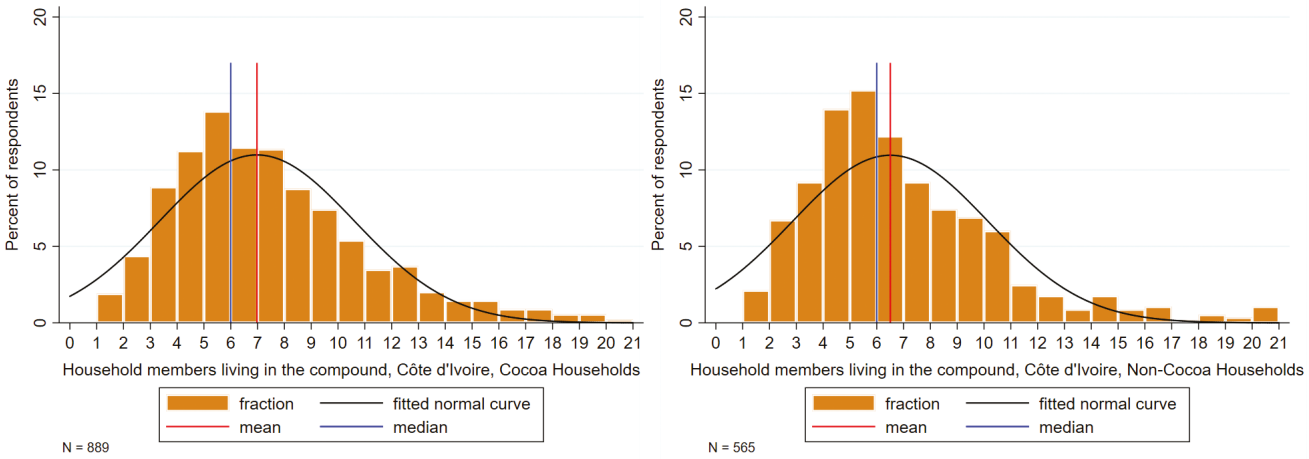


Figure 3.6 Number of household members, distribution, by cocoa vs non-cocoa households, Côte d'Ivoire



Furthermore, significant differences in the number of people in the household were found when disaggregating by gender of the household head. Female-headed households tend to include a much higher proportion of single, widowed and divorced respondents than male-headed households. It stands to reason then that unmarried households would have, on average, fewer people in the household. In Ghana, female-headed households had an average of 5.01 members compared with 5.95 members for male-headed households *(highly significant)*. In Côte d'Ivoire, female-headed households had an average of 5.29 members compared with 6.99 members for male-headed households *(highly significant)* (Table 3.25).

Table 3.25 Number of household members, by sex of household head

	Ghana female head	Ghana male head	pvalue	sig	Côte d'Ivoire female head	Côte d'Ivoire male head	pvalue	sig
mean	5.01	5.95	0.00	***	5.29	6.99	0.00	***
std.error	0.16	0.07			0.27	0.10		
N	286	1262			153	1296		
hhmem_number								

Figure 3.7 Number of household members, distribution, by sex of household head, Ghana

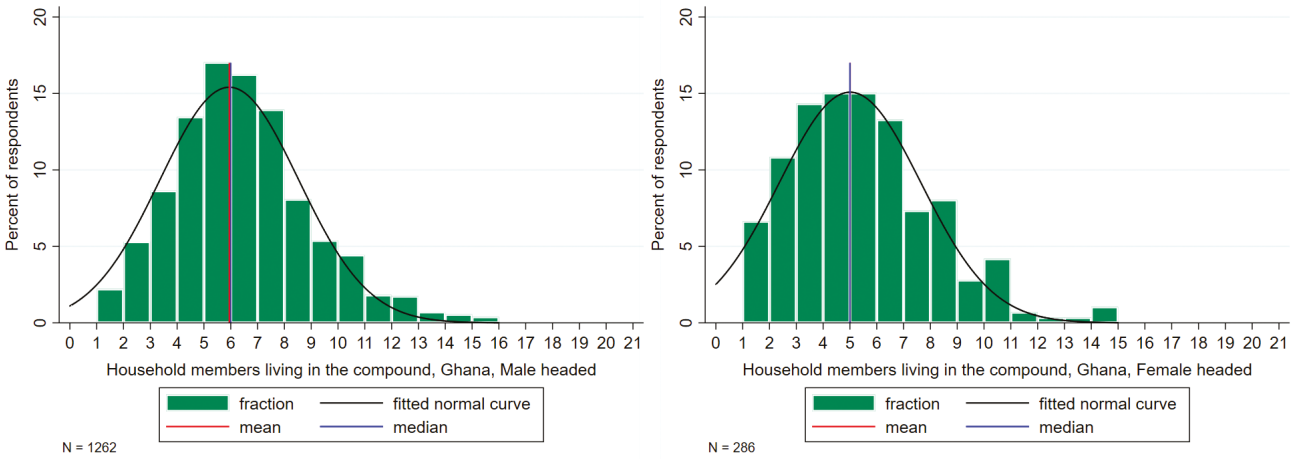
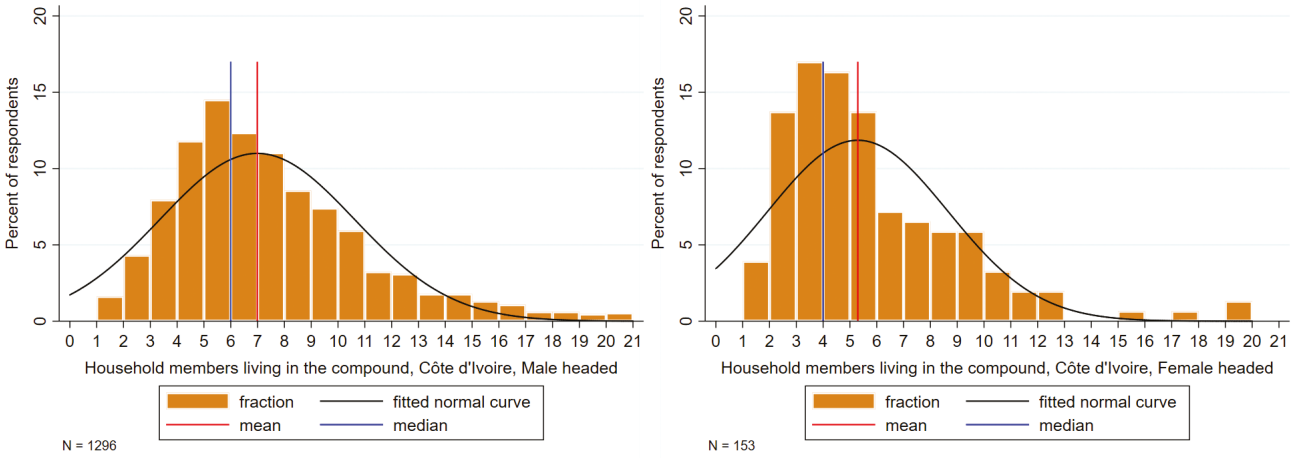


Figure 3.8 Number of household members, distribution, by sex of household head, Côte d'Ivoire



The dependency ratio is used to measure the pressure on productive household members. It is an age-population ratio of those typically not in the labour force (the dependent part comprises ages 0 to 14 and 65+) and those typically in the labour force (the productive part comprises ages 15 to 64). Based on survey household composition data, we can calculate the dependency ratio. In Ghana, in cocoa households the dependency ratio is 1.01, compared with 0.80 for non-cocoa households *(highly significant)*. This means that there is slightly more burden on productive members of cocoa households than non-cocoa households. However, there was found to be no statistical differences between cocoa and non-cocoa households in Côte d'Ivoire (Table 3.26).

Table 3.26 Household, dependency ratio, by cocoa vs non-cocoa households

	Ghana cocoa	Ghana non-cocoa	pvalue	sig	Côte d'Ivoire cocoa	Côte d'Ivoire non-cocoa	pvalue	sig
mean	1.01	0.80	0.01	***	1.09	1.17	0.11	
std.error	0.03	0.05			0.03	0.05		
N	1282	237			882	558		
dep_ratio								

There was also found to be no statistically significant difference in dependency ratio for male and female-headed households in either country. While female-headed households have fewer household members, on average, they also have fewer dependents.

3.1.8 Summary

The world is not 'running out of cocoa farmers'. We find no evidence that the average age of cocoa farmers is increasing over time. Younger farmers continue to step into cocoa at a rate that at least replaces older farmers stepping out. In Ghana, the mean average of cocoa farmers in our sample is 50.69 years, and is 45.55 years in Côte d'Ivoire. It should be noted that, as in other studies, the respondent was often the age of the household head, who is typically the oldest person in the household.

In Ghana, respondents from cocoa households were found to be older, on average, by 5.5 years than respondents from non-cocoa households. Analysis of the distribution of respondent ages suggests this is a result of both a higher proportion of older respondents and a lower proportion of young respondents in cocoa households. We hypothesise that some older farmers stay in cocoa longer than other crops because once cocoa farms are established there is lower labour demand than for other crops, and hired labourers can manage the cocoa farm. Also young farmers face barriers to owning land for cocoa, whereas they can choose to lease land for other non-tree crops.

In Côte d'Ivoire, respondents from cocoa households were found to be older, on average, than respondents from non-cocoa households by 2 years. However, when analysing the distribution of the age of cocoa and non-cocoa respondents, we did not find a statistical significance, which casts doubt on the sample populations differing in age.

Both in Ghana and in Côte d'Ivoire substantial differences in educational attainment were observed between male and female-headed households. In Ghana, 46% of female heads reported having attained no formal education, compared with 21% of male heads. Likewise, in Côte d'Ivoire, 50% of female heads reported having attained no formal education, compared with 30% of male heads. Educational attainment is a reflection on the education system many decades ago rather than the present system. As expected there were no major differences in educational attainment between cocoa and non-cocoa household heads.

In Ghana, youth have a slightly higher educational attainment than non-youth, while in Côte d'Ivoire this difference is more marked. Ivorian youth have a significantly higher primary school attainment than non-youth. Additionally, in both countries, we find youth completing senior high school and university at slightly higher rates than non-youth.

In Ghana, virtually all school-aged girls and boys were reported to be in school. However, around 20% of Ivorian boys 23% of Ivorian girls are not in school. No statistically significant differences were found between cocoa and non-cocoa households.

Female household heads represent a mix of single, divorced, widowed or married women. This diversity of marital status may be important to keep in mind as we describe differences between male and female-headed households throughout the report.

Male head of households are usually married, while female headed households are not. This reflects cultural norms whereby, in marriage, the male normally self-identifies as the household head.

In Ghana and Côte d'Ivoire, more than one third of respondents self-identified as 'leaders'. In both countries, more men (37%) than women (14%) self-identified as a leader. 'Elder' and 'church/mosque leader' were among the most common leadership categories in Ghana, while 'church/mosque leader' and 'opinion leader' were the most common in Côte d'Ivoire.

Leadership was often associated with age. Ghanaian leaders are, on average, almost 4 years older than non-leaders. In Côte d'Ivoire, this difference is around 3.5 years.

The regions in the Ghana sample with the most migrants were Western and Brong Ahafo. In Côte d'Ivoire, Bas-Sassandra reported the most migrants, defined as people born outside the region (now an administrative district). In both countries, these are border areas.

In Ghana, the mean household size was 5.77 members and, in Côte d'Ivoire, households were slightly larger at 6.79 household members. Using two stages of questioning, we believe this is a more accurate estimate for Côte d'Ivoire than is often reported. In both countries, cocoa households were slightly larger on average.

Significant differences in the number of people in the household were found when disaggregating by gender of the household head. In Ghana, female-headed households had an average of 5.01 members compared with 5.95 members for male-headed households. In Côte d'Ivoire, female-headed households had an average of 5.29 members compared with 6.99 members for male-headed households.

In Ghana, there is a slightly higher burden on productive members of cocoa households (1.01) than non-cocoa households (0.80) *(significant)*. However, there was found to be no statistical differences between cocoa (1.09) and non-cocoa households (1.08) in Côte d'Ivoire.

There was found to be no statistically significant difference in dependency ratio for male and female-headed households in either country.