

**Gender differences in time use among indigenous adolescents
in Boca Costa region, Guatemala**

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INTRODUCTION

Between the ages of 10 and 19, adolescents experience rapid and profound physical, cognitive and social changes. They make many decisions that set the stage for later life, for example related to education, employment, relationships and risk behavior (Blum et al. 2014, Lloyd 2005). Many behavior patterns of adulthood are developed during this life stage, as adolescents expected to begin conforming more strictly to gender norms, with boys becoming more independent as girls face more restrictions in their movements and behavior (Kågesten et al 2016, McCarthy, Brady and Hallman 2016, Mmari et al. 2016, Hallman et al. 2015). Around the world, social norms dictate that girls spend more time than their brothers on household chores. The resulting time poverty among adolescent girls limits their opportunities for education and personal development.

Why study adolescent time use?

Approximately one quarter of the world's population is younger than 15 (United Nations 2017). Although the percentage is declining, the absolute number of children and early adolescents is expected to remain stable around 2 billion for the next several decades. Children and adolescents are thus important demographically but on a more individual level, the transition from childhood to adult is a critical time in the life course.

Routine behaviors—how people spend their time—are central to gender and social norms. We know that among adults, men spend more time than women on paid or “productive” labor, while women spend more time on unpaid work such as caring for the family and household, or “reproductive labor”. (Seymour, Malabiti and Quisumbing 2017). We know also that time use changes throughout the life course, with the daily structure of children very different from that of adults. As they pass through puberty, children are expected to take on adult responsibilities.

Since the 1990s, social scientists in North America and Europe have considered children as social agents in their own right (Barker et al. 2009), but in low- and middle-income countries (LMICs), researchers and policymakers have tended to prioritize children only up to age five. Once girls reach age 15, they become “women of reproductive age” as policies and programs instrumentalize them as vehicles for development and/or caregivers for future generations. But adolescents are not just future adults.

In their proceedings, the 2016 Young Lives Conference on Adolescence, Youth and Gender—a gathering of 170 researchers, policymakers and practitioners working in the developing world—identified three challenges for future research on adolescence and youth: 1) take a genuinely multidisciplinary approach; 2) reflect diversity, difference and gendered relationships across the life course and 3) focus on the positives, not just risks.

Time use studies in high income countries (HIC) are more likely to report on adults, but studies of children and adolescents do exist (see e.g. Wong et al. 2017, Hunt and McKay 2015). These studies tend to focus on priority issues in these settings, such as excessive screen time, (in)activity and substance use. One reason is that specific risk behaviors are easily measured with “stylized” questions, where a respondent is asked something like, “How many hours per week do you spend doing _____?” or “In a typical day, how many hours do you _____?” Stylized questions are easy to include in surveys but considered less reliable than other methods because they depend not only on the respondent’s willingness to tell the truth but also their ability to recall and correctly estimate a “typical day” (Seymour, Malabit and Quisimbing 2017, Sheldon and John 1996). When stylized questions are compared to time diaries, the methods tend to produce similar estimates for structured activities such as salaried employment but differ (in an inconsistent manner) when measuring less structured activities such as travel, shopping and care work (Seymour, Malabit and Quisimbing 2017).

Another important drawback to stylized questions is that they only collect information about a specific activity rather than the totality of a person’s day, giving no information about competing demands (Hunt and McKay 2015). This is an important limitation because spending more time on one activity requires spending less on another. Hunt and McKay (2015) instead recommend “person-centered” study of time use that does measure all activities and analyzes them holistically rather than in isolation. This is consistent with the Young Lives call for studying both risk and protective factors.

One protective factor for adolescents is having a supportive social network. Studies of adolescents in a number of countries have found that boys tend to have more close friendships and to spend time with their friends than adolescent girls, particularly poor girls (Hallman and Roca 2007, Erulkar et al. 2004, Hallman 2011).

Why indigenous adolescents in Guatemala?

With 15 million inhabitants, Guatemala is the most populous country in Central America. It has the youngest population and the highest population growth in Latin America.

Approximately 40% of the population is indigenous Maya. The indigenous population lives predominantly in rural areas and has worse social and economic status than the non-indigenous population. Indigenous children leave school earlier. Though ethnic and gender differences in enrollment have diminished for children aged 8 -12, school attendance for Mayan girls begins to diverge from Mayan boys and non-indigenous boys and girls around age 13. Mayan girls begin dropping out of school at this age, while indigenous boys and non-indigenous boys and girls remain in school longer. A 2006 study of the effects of gender, ethnicity, poverty, and residence on education in Guatemala found that the main reason given for not attending school was competing household responsibilities for girls, and paid work for boys (Hallman et al. 2006).

Population Council/Guatemala has been implementing the program Abriendo Oportunidades (Opening Opportunities, or AO) to counter the social exclusion of girls since 2004. The community-based program provides safe spaces for adolescent girls to meet to develop social support networks and life and leadership skills. AO specifically targets the “hardest to reach” girls by working in remote rural settings where most residents are poor and indigenous— areas that are seldom reached by other development programs. The program seeks to improve self-esteem, decision-making abilities, beliefs around social and gender norms, and knowledge of human rights and health and family planning; prevent violence; and increase close female friendships outside of the family.

Former AO staff founded a non-governmental organization (NGO) called the Indigenous Women's Network (Red de Mujeres Indígenas, REDMI Aq’abal or REDMI) that took over implementation of AO in a number of communities around the country in late 2017.

METHODOLOGY

Aims

This paper is part of a larger study comparing alternative approaches to measure adolescent mobility and time use in low-resource settings. This paper uses one of the data sources—24-hour time recall surveys—to answer the following questions:

1. What is the overall activity pattern among rural indigenous boys and girls of the Boca Costa region in Guatemala?
2. Are there differences in time use patterns by gender or between older (15-17 years) and younger (13-14 years) adolescents?

Sample

In collaboration with REDMI and the Council, we selected four communities where REDMI was beginning to implement AO. Initial criteria for selection were: 1) adequate numbers of AO participants and 2) enthusiasm for the program and RCT among program participants, families and community leaders. Of the five communities initially selected, one was geographically remote from the others and spoke a different language. Given our limited resources and target of four communities, we dropped that Tierra Fría (highland) village from the sample.

The selected villages are in the Boca Costa (piedmont) region of southwest Guatemala. The Boca Costa region is less developed than either the highlands or the coast, with poor transportation infrastructure. Most residents are indigenous and speak limited Spanish. (In the study area, Kiché is the main Mayan language.) The main form of employment is hired labor on large farms growing coffee or sugar cane. Education levels are low even compared to other parts of Guatemala: today most children complete 6 years of primary school, but mothers of AO participants have on average 2 years of formal education.

We invited all AO participants in the four villages to participate in the research, along with their brothers in the same age range (13-17 years). We decided to include only AO participants' brothers rather than all community boys for both practical and theoretical reasons. REDMI staff knew the parents and girls so were able to reach their brothers easily. Parents or guardians had a greater understanding of AO and what their children will be involved in and felt comfortable asking questions of REDMI study staff. Working with

siblings strengthens the design by reducing unmeasured sources of variability that we would expect if we added additional families. As discussed below under “Sample”, we later expanded the pool of boys.

Procedures

Marin was principal investigator and present for most activities, but four young indigenous women including Guit conducted the fieldwork. All were AO mentors who were previously employed by the Population Council but moved to REDMI as the AO program transitioned. Guit was a regional coordinator for AO and coordinator of the study team. Another was an AO supervisor and the other two were leaders of groups in their communities. Three of the team lived in study villages, so were well known to participants’ families and were available to assist participants after hours, when needed. They were all fluent in Spanish as well as Kiché and conducted interviews in Kiché.

Our study was approved by the Princeton University Institutional Review Board. In accordance with ethical standards, we obtained parental consent and adolescent assent for participation (Schenk and Williamson 2005). Participants were told they could opt out of any portion of data collection they chose. The time recall survey was the only component of the study that all participants completed.

We collected time use data through and interviewer-administered 24-hour recall survey as well as self-administered time diaries that participants completed on mobile phones. This paper reports only on the interviews, as the data were much more complete.

Interviewers visited each participant at home or at another agreed-upon location to record all of their activities from 4am the previous day to 4am that day, in 15-minute increments. Activities were recorded as described by participants and then grouped into 30 categories. See Table 1 below. As recommended by the developers of the Multimedia Activity Recall in Children and Adults (MARCA) software (Hunt et al. 2013), the interviewer first asked what time the participant woke up and what time they ate meals. These “anchor points” help reduce the cognitive burden on participants because these activities are often done at regular times. This is especially useful in settings where clock time is not culturally important, such as ours, and with children, who may have trouble estimating time.

Table 1. List of activities and categories

PERSONAL: personal hygiene, sleeping, eating, medical appointment

RECREATION: sports, dancing, physical activity, club or program, tv, videogames, internet, texting or talking on phone, hanging out/talking with friends, reading, resting without doing anything else, listening to music

COMMUNITY: fair or community event, family visit, religious activity

FOOD PREPARATION: going to mill to grind corn, building a fire, cooking, making tortillas

OTHER HOUSEWORK: household chores other than food preparation e.g. washing dishes, laundry, cleaning, taking care of children or adults

UNPAID WORK OUTSIDE THE HOUSE: unpaid chores outside the house, shopping

ECONOMIC ACTIVITY: embroidery, paid work

An aim of AO is to build and strengthen friend networks so that girls are less socially isolated. Therefore, we were interested in comparing the amount of time participants spent alone and the amount of time with friends. Along with each activity, we recorded who the participant was with. They could be 1) alone, 2) with child family members, 3) with friends, 4) with adult family members, 5) with others, or any combination. Interviews took about 10 minutes.

Our study took place during school holidays, in November – December 2017. Though we were interested in differences between adolescents attending school and not, we will have repeat the surveys during the school year to get that information.

Participants kept the diary for one weekday and one Saturday. Nearly all interviews were about a weekday. A very few in one village were about a Saturday, but because it was school holidays, the participants' activities were the same on a weekday as on a Saturday. (In fact, these interviews were conducted on a Sunday because the participants worked Monday – Saturday, and so were only available on Sunday.) We have therefore analyzed all of the days together, rather than separating weekdays from weekends.

Analysis

The results presented in this paper are descriptive. We present standard time use indicators of participation rates (percent) and mean times spent on activities by gender and, for girls, age group (13-14 and 15-17). We chose these age groups because they correspond with different

development stages (early adolescence and middle adolescence) (McCarthy, Brady and Hallman, 2016), but also because the 15th birthday is an important milestone for girls in Latin American culture.

We present both individual activities and seven broad categories of activities shown in Table 1. We adapted categories from surveys with adolescents in Peru (Young Lives, 2015) and adults in Mexico (INMUJER, 2010). They correspond fairly closely with those used in surveys of adolescents from Canada (Hilbrecht, 2008) and Ireland (Hunt et al., 2014) but have more types of work and fewer types of entertainment.

“Unpaid work outside the house” included gathering firewood as well as agricultural tasks for the family, particularly relating to harvesting and processing coffee.

“Economic activity” primarily consisted of embroidery for girls and picking coffee for both boys and girls, but also included helping with family businesses such as shops or construction. In many cases the adolescents did not get paid themselves but the family received the income.

In high-income countries, eating is often separated into eating at home, which would go into the “personal” category, and eating out, which is considered recreation. For our setting and participants, eating may sometimes have been social but it was not a form of entertainment.

A researcher of adolescent time use in the United States said that their participants tend to describe their leisure time as “hanging out with friends” and need to be prompted to find out what specifically they are doing with their friends (Boettner, 2016). Therefore we trained our interviewers and participants to list specific activities, but they also had an option for “talking with friends,” in case they were not doing anything else. Similarly if a participant was resting and doing something else, like texting or watching TV, that activity was listed. Only if they were “resting without doing anything else” was it coded as resting.

To test for differences between groups, we performed both t-tests and non-parametric Mann-Whitney U or Wilcoxon rank sum test.

RESULTS

Sample

Table 1 shows the number of participants of each gender by age and village. Participants were distributed fairly evenly across villages.

We invited all AO participants and their brothers to join the study. Most girls who were in the village at the time of the study chose to participate (54 in total) but only 8 brothers. The remaining boys were cousins or nephews of AO participants (7) or friends of other boys participating (4). Many girls did not have brothers in the age range, but others did not want to participate. We got parental consent from about twice as many boys as wanted to participate. Some boys said they had to work or were otherwise busy, though we did accommodate work schedule for those remaining in the village for the week of data collection. Other boys said they were not interested, we suspect because AO is known as a program for girls. Most boys who participated were 13-14.

Table 2. Sample characteristics

	TOTAL	GIRLS	BOYS
TOTAL	73	54	19
Village			
Village 1	19	14	5
Village 2	20	14	6
Village 3	14	12	2
Village 4	20	14	6
Age			
13	21	15	6
14	17	10	7
15	19	16	3
16	8	7	1
17	12	10	2

The remainder of the results section first describes the overall picture of time use in terms of global mean time spent on activities and categories, comparing all girls to boys, and older girls to younger girls. It then reports on participation rate and mean time among participants by category: economic activity, household chores, personal care and leisure. It concludes with

results on time spent alone and with friends. Figures 1 – 3 present an overview of findings by activity category.

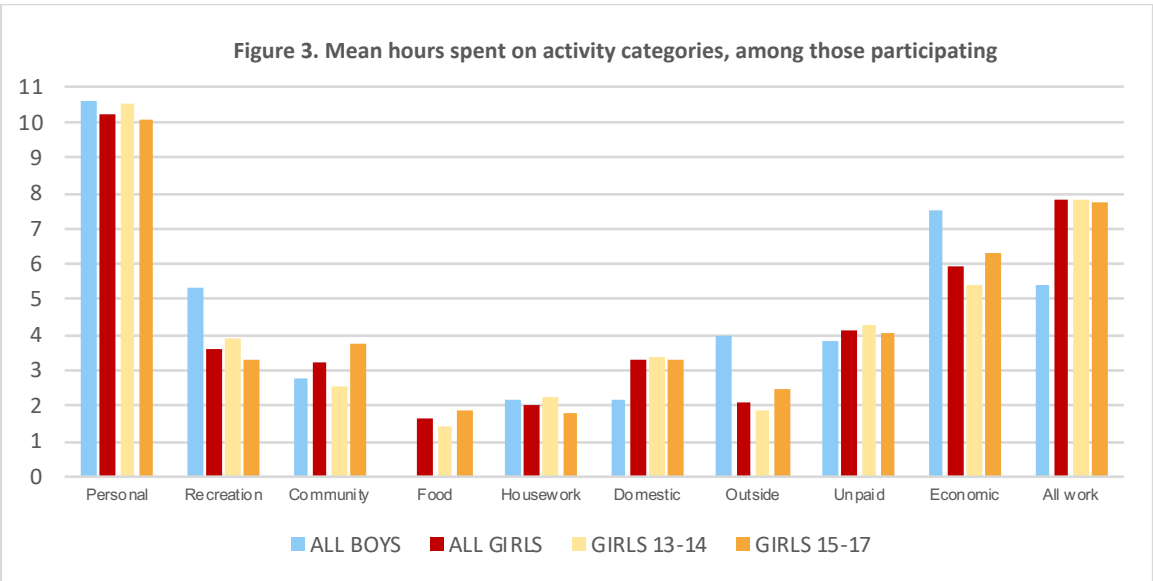
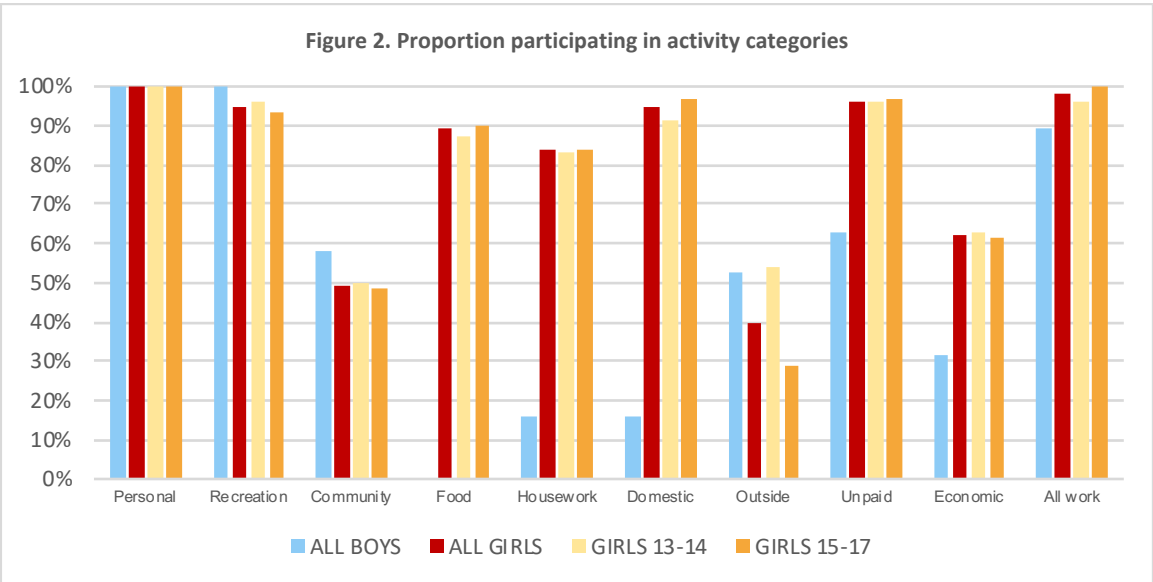
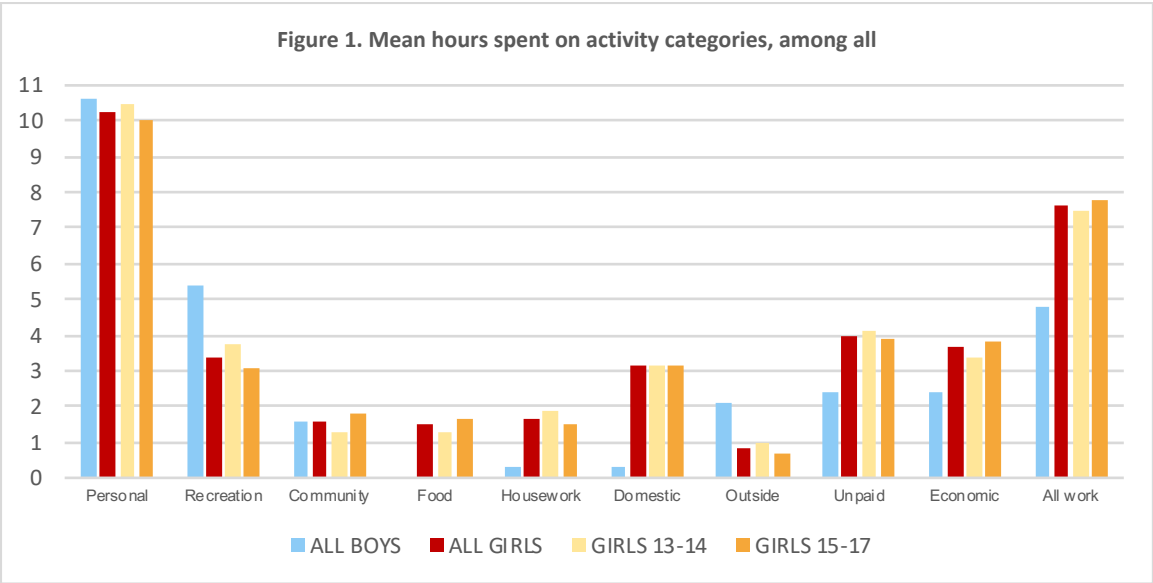
Average time use across the population

Average time use among all includes those who did not participate in the activity so does not represent actual experience of individuals, but it allows us to get a global view of differences by gender and age in a single number—for example, an “average girl” compared to an “average boy”.

Figure 1 shows average time spent on each activity category. On average, boys and girls of all ages spent a little over 10 hours a day on personal care, sleeping and eating. Both boys and girls spent a little over 90 minutes on community activities, which consisted of religious activities and family visits. Older girls spent half an hour more than younger girls, but the differences are not significant.

There were large and significant differences between boys and girls in time spent on food preparation and other household chores. No boys did any food preparation whereas girls spent an average of 90 minutes, plus an additional almost two hours on other housework, including cleaning, washing dishes or clothes, and taking care of siblings or other family members. Boys spent an average of less than half an hour on housework. Older girls spent more time on food preparation and less time on housework than younger girls but when the two categories were combined, there was no difference: older girls spent an average of 3.5 hours on housework and younger girls only 14 minutes less.

Boys spent an average of two hours on unpaid work outside, which included shopping for the family—over an hour more than girls—but when all unpaid work is combined (food preparation, housework and chores outside) girls spent an average of four hours whereas boys spent only two and a half. Girls also spent over an hour more on economic activities—an average of 3 hours 39 minutes compared to an average of 2 hours 23 minutes by boys. When all work is combined, girls spent an average of 7 hours 38 minutes working, significantly more than the 4 hours 49 minutes boys worked on average. Boys spent the bulk of this difference (2 hours) in leisure activities, in particular sports, TV, videogames and the internet, and talking out with friends.



Other than food preparation and other housework, there were only small differences between older and younger girls on the broad categories of activities. Table 3 shows mean time among the entire sample, plus the range, for individual activities and there we see some small differences by age group, though none are significant. Younger girls spent more time than older girls on TV, videogames and the internet and on shopping. They less on embroidery and on other paid work, and less on food preparation including trips to the mill.

Table 3. Average time (and range) spent on activities across population, in minutes

	BOYS		GIRLS		GIRLS 13-14		GIRLS 15-17	
	MEAN	Range	MEAN	Range	MEAN	Range	MEAN	Range
Personal hygiene	89	(15–345)	76	(15–165)	81	(15–150)	72	(15–165)
Sleeping	459	(150–645)	463	(210–630)	475	(300–600)	453	(210–630)
Eating	88	(45–165)	76	(30–270)	74	(30–165)	78	(45–270)
Sport, dancing, physical activity	43	(0–165)	13	(0–330)	7	(0–120)	18	(0–330)
Program or club	2	(0–15)	3	(0–90)	5	(0–90)	2	(0–30)
TV, videogames, internet	126	(0–525)	84	(0–285)	106	(0–285)	67	(0–225)
Text or talk on phone	46	(0–150)	62	(0–525)	57	(0–195)	67	(0–525)
Talk with friends	73	(0–210)	13	(0–120)	16	(0–120)	10	(0–105)
Music	2	(0–45)	5	(0–90)	3	(0–30)	8	(0–90)
Read	0	(0–0)	1	(0–30)	0	(0–0)	2	(0–30)
Rest, doing nothing else	28	(0–165)	18	(0–390)	24	(0–390)	13	(0–120)
Family visits	39	(0–390)	16	(0–135)	21	(0–135)	13	(0–135)
Religious activities	58	(0–255)	78	(0–480)	55	(0–285)	96	(0–480)
Feria / community event	0	(0–0)	3	(0–75)	8	(0–75)	0	(0–0)
School	0	(0–0)	5	(0–270)	0	(0–0)	9	(0–270)
Travel to/from school	0	(0–0)	1	(0–60)	0	(0–0)	2	(0–60)
Mill, prepare/grind corn	0	(0–0)	11	(0–60)	8	(0–30)	15	(0–60)
Cook, make tortillas, build fire	0	(0–0)	78	(0–315)	68	(0–315)	86	(0–195)
Other household chores	21	(0–300)	86	(0–330)	93	(0–330)	81	(0–225)
Care for children or adults	0	(0–0)	13	(0–180)	18	(0–180)	10	(0–135)
Shopping for family	28	(0–345)	16	(0–195)	26	(0–195)	8	(0–135)
Chores outside house, unpaid	97	(0–570)	35	(0–510)	34	(0–375)	35	(0–510)
Embroidery	0	(0–0)	120	(0–660)	110	(0–525)	128	(0–660)
Work for pay	143	(0–600)	98	(0–885)	93	(0–630)	103	(0–885)
Out of town trip	30	(0–300)	0	(0–0)	0	(0–0)	0	(0–0)
Other	0	(0–0)	2	(0–75)	0	(0–0)	4	(0–75)

Participation rate and average time among participants

The “participation rate” in an activity is the percent of the sample that reported taking part in an activity at all (for at least 15 minutes). Table 4 presents participation rates for activity categories. Participation rates in each category were nearly identical for older and younger girls, except for chores outside the house. The primary differences in participation between boys and girls were in food preparation and other household chores, and in paid work, all of which were significant.

Table 4. Participation in main activity categories, by gender

ACTIVITY	BOYS	GIRLS	Gender gap	
			Mean difference (SE)	<i>p</i>
Personal needs	100%	100%		
Recreation	100%	95%	-0.055 (0.031)	
Community activities	58%	49%	-0.088 (0.135)	
Food preparation	0%	89%	0.891 (0.042)	0.000
Other housework	16%	84%	0.678 (0.100)	0.000
Chores outside the house	53%	40%	-0.126 (0.135)	
Economic activity	32%	62%	0.302 (0.128)	0.024
Summary work categories				
Domestic work (food and housework)	16%	95%	0.788 (0.073)	0.000
Any unpaid work (domestic or outside)	63%	96%	0.332 (0.117)	0.000
Any work (paid or unpaid)	89%	98%	0.087 (0.075)	

Table 5 presents mean and median time spent on activities by those who participated. Because of the small sample sizes in these subgroups, we did not test for significant differences in means or medians.

Economic activity

One-third of boys and almost two-thirds of girls participated in some economic activity, a significant difference. For boys, this was usually picking coffee but included helping with family businesses such as running a shop or construction. Girls were much more likely to do embroidery at home (42%) than to work outside (22%), picking coffee, helping with a family business, or cleaning or providing child care for other families. Boys and girls who did paid work other than embroidery spent the same amount of time doing so: a mean of 7.5 hours.

Girls who did embroidery spent an average of just under five hours doing so, with older girls on average spending about half an hour more than younger girls.

Domestic work

Virtually all girls (96%) but only 62% of boys did some kind of work in the house or for the family. Most girls did some sort of domestic work inside the house, including food preparation, (89%) or taking care of family members or other household chores (84%). The median time among those who did these activities was 90 minutes for cooking and 105 minutes for other housework. Only 3 of boys (16%) did any housework, but among those who did, the median time was an hour. None did any food preparation. Half of the boys and 40% of girls did chores outside the house. Boys primarily collected firewood, and both boys and girls performed tasks related to coffee harvesting.

Gender differences are significant for traditionally female chores such as food preparation and housework, but even when these more typically “male” outside chores are included, girls were significantly more likely to do unpaid work for the family. However, among those who did unpaid work for the family, the median time was exactly the same for both girls and boys: 3 hours and 45 minutes. Older girls spent a median of 45 minutes longer than younger girls, but the difference was not significant. Two boys, age 13 and 14, and one girl aged 13 did no work of any kind the previous day.

Recreation

All boys and practically all girls had some form of recreation the previous days, but boys and girls differed on the overall time spent (a median of three and a half hours for boys and just under three hours for girls), as well as on the specific activities. Boys were much more likely than girls to participate in sports or other physical activity and to spend any time on TV, videogames or internet. They were also much more likely to spend time talking with friends in person (63% vs. 22%) whereas girls were slightly more likely spend time communicating via phone or text (65% vs. 53%)—something most only had the opportunity to do because we gave them phones to use during the study.

The mean and median time spent on each activity by those who participated in it were quite similar for both genders, with the exception of “talking with friends”, where girls spent a median of an hour and boys spent 45 minutes longer.

Table 5. Participation rates in activities

	ALL BOYS	ALL GIRLS	GIRLS 13-14	GIRLS 15-17
RECREATION				
Sport, dancing, physical activity	37%	9%	8%	10%
Program or club	16%	7%	8%	6%
TV, videogames, internet	84%	65%	75%	58%
Text or talk on phone	53%	65%	71%	61%
Talk with friends	63%	22%	25%	19%
Music	5%	11%	8%	13%
Rest, doing nothing else	37%	25%	21%	29%
COMMUNITY				
Family visits	26%	24%	25%	23%
Religious activities	32%	33%	33%	32%
FOOD PREPARATION				
Mill, prepare/grind corn	0%	58%	46%	68%
Cook, make tortillas, build fire	0%	85%	83%	87%
OTHER HOUSEWORK				
Other household chores	16%	84%	83%	84%
Care for children or adults	0%	13%	17%	10%
CHORES OUTSIDE				
Shopping for family	21%	27%	42%	16%
Chores outside house, unpaid	37%	16%	21%	13%
ECONOMIC				
Embroidery	0%	42%	42%	42%
Work for pay	32%	22%	21%	23%

Table 6. Average time and proportion of the day spent on activities, by gender and age

	Average number of minutes spent on activity								% of day spent on activity (median / 24 hours)			
	BOYS				GIRLS				BOYS		GIRLS	
	N	mean (median)	N	mean (median)	N	mean (median)	N	mean (median)				
Personal care	19	636 (645)	55	615 (615)	24	630 (630)	31	603 (615)	45%	43%	44%	43%
Personal hygiene	19	89 (75)	55	76 (75)	24	81 (75)	31	72 (75)	5%	5%	5%	5%
Sleeping	19	459 (495)	55	463 (465)	24	475 (480)	31	453 (450)	34%	32%	33%	31%
Eating	19	88 (75)	55	76 (60)	24	74 (60)	31	78 (60)	5%	4%	4%	4%
Recreation	19	321 (270)	52	215 (173)	23	234 (195)	29	199 (150)	19%	12%	14%	10%
Sport, dancing, physical activity	7	118 (105)	5	144 (120)	2	83 (83)	3	185 (135)	7%	8%	6%	9%
Program or club	3	15 (15)	4	45 (30)	2	60 (60)	2	30 (30)	1%	2%	4%	2%
TV, videogames, internet	16	150 (105)	36	128 (120)	18	141 (135)	18	116 (120)	7%	8%	9%	8%
Text or talk on phone	10	87 (83)	36	95 (75)	17	80 (75)	19	109 (75)	6%	5%	5%	5%
Talk with friends	12	116 (105)	12	58 (60)	6	65 (68)	6	50 (45)	7%	4%	5%	3%
Music	1	45 (45)	6	50 (30)	2	30 (30)	4	60 (60)	3%	2%	2%	4%
Rest, doing nothing else	7	75 (45)	14	70 (38)	5	114 (60)	9	45 (30)	3%	3%	4%	2%
Community	11	166 (135)	27	192 (135)	12	151 (135)	15	225 (135)	9%	9%	9%	9%
Family visits	5	147 (105)	13	68 (60)	6	83 (90)	7	56 (45)	7%	4%	6%	3%
Religious activities	6	183 (210)	18	239 (188)	8	165 (165)	10	299 (315)	15%	13%	11%	22%
Food preparation	0		49	101 (90)	21	86 (75)	28	111 (113)		6%	5%	8%
Mill, prepare/grind corn	0		32	20 (15)	11	16 (15)	21	21 (15)		1%	1%	1%
Cook, make tortillas, build fire	0		47	92 (90)	20	82 (75)	27	99 (90)		6%	5%	6%
Other housework	3	130 (60)	46	119 (105)	20	134 (98)	26	108 (105)	4%	7%	7%	7%
Other household chores	3	130 (60)	46	103 (90)	20	112 (83)	26	96 (90)	4%	6%	6%	6%

	Average number of minutes spent on activity										% of day spent on activity (median / 24 hours)			
	BOYS					GIRLS					BOYS	GIRLS	GIRLS 13-14	GIRLS 15-17
	N	mean (median)	N	mean (median)	N	mean (median)	N	mean (median)	N	mean (median)				
Care for children or adults	0		7	105 (105)	4	109 (120)	3	100 (105)			7%	8%	7%	
Unpaid chores outside	10	239 (225)	22	125 (60)	13	111 (60)	9	147 (60)			16%	4%	4%	4%
Shopping for family	4	135 (83)	15	57 (30)	10	62 (30)	5	48 (30)			6%	2%	2%	
Chores outside house, unpaid	7	264 (270)	9	212 (165)	5	165 (90)	4	270 (255)			19%	11%	6%	18%
Economic activity	6	453 (465)	34	354 (330)	15	324 (330)	19	377 (330)			32%	23%	23%	23%
Embroidery	6	453 (465)	12	451 (518)	5	444 (525)	7	456 (510)			32%	36%	36%	35%
Work for pay	0		23	288 (255)	10	264 (210)	13	306 (270)			18%	15%	19%	
Any unpaid work	12	231 (225)	53	248 (225)	23	258 (195)	30	242 (240)			16%	16%	14%	17%
Total work	17	323 (315)	54	467 (480)	23	469 (450)	31	465 (480)			22%	33%	31%	33%

Community activities

We include family visits along with religious activities under the category of “Community activities” because they may be considered to be social, enjoyable and/or an obligation.

Participation rates were similar across genders and age groups. Boys who had family visits spent more time than girls, and older girls who participated in religious activities spent much more time than younger girls.

Personal needs

Everyone ate, slept and performed personal hygiene activities such as bathing and getting dressed. As many girls were responsible for building a fire first thing and grinding corn and preparing breakfast, we expected they might sleep less than boys but there were only small differences in the median (7 hours 45 minutes for girls and 8 hours 15 minutes for boys). Both boys and girls reported getting up early to pick coffee, help with the family business and do chores such as gathering firewood or preparing food.

Time alone and with friends

For each activity, participants were asked who they were with. These responses were coded into the categories of child family members, adult family members (including those who are not parents, such as grandparents, aunts and uncles), friends, others and no one. They could list any combination (except for being alone).

For our analysis of time spent with friends (with or without any others present) and time alone we only included time that the participant was awake. We report median time in minutes as well as first and third quartiles. For each participant we calculated the percent of their waking day that they were alone or with friends, and we report the median of that percentage.

Boys and girls both reported spending a sizable portion of their day alone: a median of 43% for girls and 29% for boys (not significant).

The difference in time spent with friends, however, was striking. Boys spent a median of 17% of their waking day, or two and a half hours, with friends, whereas the median for girls was 0. For

older girls, even the 75th percentile was 0. For younger girls, it was just over one hour, compared to nearly 6 hours for boys.

Table 7. Time alone and with friends

	BOYS	GIRLS	GIRLS 13-14	GIRLS 15-17
ALONE				
Median % of time awake	29%	43%	43%	38%
Median minutes	270	405	398	405
25th percentile	180	240	240	225
75th percentile	345	525	585	495
FRIENDS				
Median % of time awake	17%	0%	0%	0%
Median minutes	150	0	0	0
25th percentile	75	0	0	0
75th percentile	345	60	68	0

DISCUSSION

There were striking differences in the amount of time boys and girls spent doing household chores. Few boys spent any time doing chores inside the house, while virtually all girls did some household chores. Nearly all girls did a combination of food preparation (including building a fire, cooking and making tortillas, going to the mill to grind corn for tortillas) and other housework like cleaning. Many also took care of younger siblings. The main chore that boys did was collecting firewood. Girls spent an average of approximately four hours a day on household chores and three on economic activity, while boys spend just over two hours on each of these. This left boys with over five hours for recreation (during school holidays), two hours more than girls.

Social networks are important for good health. One of the manifestations of social exclusion of girls is that boys often have more close friends than girls. Girls and boys spent similar amounts of time alone but girls spent much less time with friends than boys. Nearly all boys spent some time with friends (and anyone else, including adult or child family members or others). Most

girls, in contrast, spent no time with friends. Those who spent time with friends spent much less time than boys.

Our findings are consistent with recent studies among adolescents in Canada (Hilbrecht et al., 2008) and Ireland (Hunt et al., 2014) that find the same gendered patterns of time use as we are familiar with in adults, with girls spending more time caring for the house and family members, and boys spending more time outside the home. Our participants had much longer working hours than these other two studies due to the developing country setting and higher levels of poverty, as well as it being school holidays.

The Young Lives study has been following two cohorts of children in Peru, Ethiopia, India and Vietnam from 2000 to 2016. They measure time use with an adapted stylized approach, where participants are given 24 people to divide up into categories similar to our categories, in accordance with how they spend their time on a typical day. Unlike our study, their analysis of 15-year-olds did not find gender differences in total time spent working (on a typical day when school is in session) except in India, but they did find similar gender differences in the type of work their participants did (Espinoza-Revolo and Porter, 2018). They also found that among those who were not in school in Peru, boys worked an hour more per day than girls, while boys in Vietnam worked less and both genders worked similar amounts of time in Ethiopia and India.

Limitations

This study has many limitations. A principle limitation is its generalizability. Our sample is small, selected from four fairly isolated, very homogeneous Kiché communities in the Boca Costa region of Guatemala. It can neither be considered representative of Guatemalan youth nor even of indigenous youth in Guatemala. The economy and transport networks differ from other parts of the country, for example, which affect how people spend their time. Selecting our sample from AO program participants also means that our sample is perhaps not representative of all families even in this region; we might expect that AO families differ from those who refuse to let their daughters participate. However, the large majority of girls in the AO age range in these communities do participate, because it is the only program targeting girls of this age (and boys often complain that there is no corresponding program for them).

One of our primary motivations for this study was to learn about competing demands for time that girls would otherwise spend in school, but the timing did not allow that. As one of the aims (and accomplishments) of AO is to keep girls in school longer, our sample would not have allowed us to compare girls in and out of school, as nearly all were continuing the following year. Because all participants in our study slept at home, we also did not get any information about adolescents who migrate to work during school holidays. Many adolescents travel with their families from finca to finca, picking coffee, while others go to the city to get paid jobs.

Our methods are subject to the usual limitations of 24-hour recall surveys in development settings: there is a certain cognitive burden in remembering the previous day and the amount of time spent on each activity in a setting where days are not structured around clock time. We attempted to minimize the burden by beginning the interview with key activities (waking and sleeping, meal times) that are less likely to vary, and adding less structured activities around them. We also do not expect difficulties in estimating time to differ by gender.

CONCLUSIONS

Despite its many limitations, this is one of the only studies that we know of to examine gender differences in adolescent time use in indigenous communities, in Guatemala or elsewhere in Latin America. In a country with such a large young population, and indigenous population, we believe this is an important step. Another important strength of our study is that we used a 24-hour time recall survey, which allows for a person-centered or holistic analysis of competing demands on time.

We found that traditional gender norms of girls performing more food preparation and housework as well as work for income are being followed, even among a generation where girls are much more likely to attend school than their mothers. Boys in turn spend more time on recreation and more time with friends. The adolescents in our study come from families that support their daughters taking part in a girls' empowerment program. We expect that they probably adhere less rather than more strongly to gender norms, compared to families in comparable settings. We therefore expect that if we find these differences among AO participants and (largely) their brothers or cousins, there are probably much bigger differences among boys and girls in similar communities that have not benefitted from AO.

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