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Time Use and Gender in Colombia

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NATIONAL TRANSFER
ACCOUNTS



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ABSTRACT

This paper studies the use of time distribution between paid and unpaid activities across age and gender in Colombia's households. Using the National Time Transfer Account methodology, we generate age profiles for paid and unpaid activities, as well as household time produced, consumed and transferred per gender. We find that male devote more time to labor market activities, leisure, and sleep. Women, in contrast, dedicate disproportionately more time to unpaid domestic housework, particularly childcare. There is not a significant gender gap in time consumed. Time use gender differentials are core to decisions on issues such as labor market participation and with it the accompanying social security contributions easing future access to pension benefits. These long-term effects have a critical macro impact in an aging society.

Keywords: Time Use, Unpaid Domestic Work, Childcare, Gender Gap, Colombia

JEL Codes: *J16, J70, J780*

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Introduction

This paper studies the use of time distribution between paid and unpaid activities across age and gender in Colombia's households. Gender roles and segmentation between unpaid domestic labor and paid labor market activities have long been described in different settings, particularly in developed nations whose labor markets tend to function smoothly relative to those in developing economies. In contrast, due to the lack of suitable data, the topic has been little explored in developing countries.

We utilize time use data to produce age profiles per gender on various unpaid housework activities in Colombia. Following the National Time Transfer Accounts (NTTA) methodology (Donehower, 2014) we generate four sets of profiles: (i) Paid and unpaid activities carried out by individuals over 10 years of age; (ii) Housework production defined as the amount of time that an individual over 10 years old devotes to all unpaid activities in a given household; (iii) Housework consumption, defined as the amount of time a given individual 'receives' from the unpaid activities produced by other individuals in the household; and (iv) Housework transfers, which are split into outflows and inflows. The former refers to the time produced but not consumed by the producer. The latter is the time consumed but not produced by the consumer.

The NTTA methodology is flexible enough to value time and, hence, it is possible to translate all profiles into currency values. We base them on the 2012 Colombian time use household survey, and the demographic profile per gender follows recent United Nations population estimates (UN, 2015). The resulting profiles, which depict gender differences in time use in both production and consumption, are essential inputs to understand labor market segregation and aid in formulating policies to reduce the gender gap.

Data and methodology

The calculations are based on the Colombian Official Statistics Bureau (*Departamento Administrativo Nacional de Estadística – DANE*) time use survey – ‘*Encuesta Nacional del Uso del Tiempo*’ (*ENUT*). The survey, representative at the national level and for the country’s five regions, covered 148,489 people in 43,500 households during the final months of 2012 and the beginning of 2013. Each household member, ten years old or older, responds to personal interviewers and reports all activities recalling his/her past 24 hours of weekdays. The survey includes information on aspects of the living conditions of the household, education, labor force, health, and how individuals use their time. The labor-related information contains current un/employment status and occupational categories following the same algorithm used by the Colombian labor market survey (*Encuesta Continua de Hogares*), designed according to International Labor Organization recommendations.

We follow the NTTA methodology that quantifies time devoted to production, consumption, and transfers of unpaid housework within households and then aggregate this by age and sex to provide a smoothed age-sex profile per activity.³ The consumption of unpaid housework is imputed for each household member as the total time consumed divided equally by the total number of household members when consumers are not explicitly identified (Donehower, 2014; NTA, 2013).

The Colombian survey, unlike most others in the world, allows us to account for the amount of time that each person devotes in caring for another member of the household and, to some extent, for other individuals. Remarkably, the survey fully identifies those individuals that are being cared off, allowing us to determine precisely producer and consumer caring activities

³ Age-specific means are smoothed using a locally weighted regression (Friedman, 1984). This methodology is preferred over other smoothers because it follows the actual point estimates and a handful of outlying observations, rather than the general trend.

per individual. For instance, we can explicitly account for a household head age 34 that reports having spent 2 hours caring for his/her 18 years old boy and 5 hours for his/her 12 years old.

NTTA, based on the NTA's equal sharing model, considers unpaid production, consumption and transfers activities by gender. Intra-household transfer estimates are based on transfers received and given. We utilize information on the amount of time allocated per household to unpaid activities as reported in the time use surveys and then assign the time produced to individuals that demand it (the consumers).

The NTTA methodology aggregates time for unpaid housework production following the "third party criterion" (Reid, 1934), where data are imputed for any activity that could be done by someone else who does not belong to the household and would receive a monetary payment for that. Every non-paid activity in the survey is aggregated into one of the following categories: cleaning, laundry (including sewing and clothing repair), cooking, household maintenance and repair, household management (including finances, scheduling, coordinating and related phone calls), pet care (not veterinary care), purchasing goods and services, childcare, eldercare and care outside the home (including volunteering) and travel (related to care activities and buying goods and services).

Colombian data are unique because for every individual reporting a caring activity they allocate this to whom she/he is caring, regardless of their age. Consequently, we can estimate not only child- and eldercare but also care for individuals of any age, an issue not typically measured in other time use surveys. In particular, we divide the care activities into those focused on childcare (ages 0 to 5), care for children between 6 and 18, care for adults between 19 and 64, and eldercare (65+).

The data, therefore, allow for the identification of every individual per age, sex and whether he/she performs any of the activities of interest. Once the time has been appropriately allocated to each activity, we can translate the hours used for consumption, production and/or transfers of unpaid domestic activities into monetary units.

Ideally, monetary units would be imputed by matching a similar paid activity with a corresponding unpaid one (i.e., match the average wage per hour of a cook to an hour of cooking at home). However, ENUT does not report the monetary income activities as we would require. In other words, the level of disaggregation is not enough to compare a cook in the labor market with a person cooking at home. We solve this issue by using observed wages and predict wages per observed NTTA activity based on the characteristics of individuals: age, sex, education, and region of residence. The regional differences are important in the Colombian labor market, with wage gaps among them.

Regarding the consumption of unpaid domestic work, as noted above, ENUT has a significant advantage over similar surveys in other countries because it links the time spent taking care of each person with the time recipients enjoy. Once monetary units have been calculated for the production of unpaid domestic work, imputing this into the consumption of housework is straightforward.

Lastly, note that during the calculation process, we had to adjust for multitasking to guarantee that every individual's day lasts 24 hours. Table 1 reports the 19 NTTA-categories we use.

Table 1. Use of time categories

Use of time Categories	
Cleaning	Eldercare (65+)
Laundry	Conversation, giving advice
Cooking	Travel
Household maintenance and repair	Work
Household management	Transport to work
Pet care	Education
Purchasing goods and services	Transport to education
Childcare	Sleep
Care (6 -18)	Leisure and self-care
Care (19-65)	

Source: Based on NTTA/CWW Time Use and Gender.

The distribution of time use

Figure 1 depicts the average person's age profile per activity. Overall, time is devoted to working, sleep and leisure with a significant portion of the population spending time on education, caring and housework.

Figure 1. Hourly distribution of time per NTTA Activity in Colombia-2012/2013

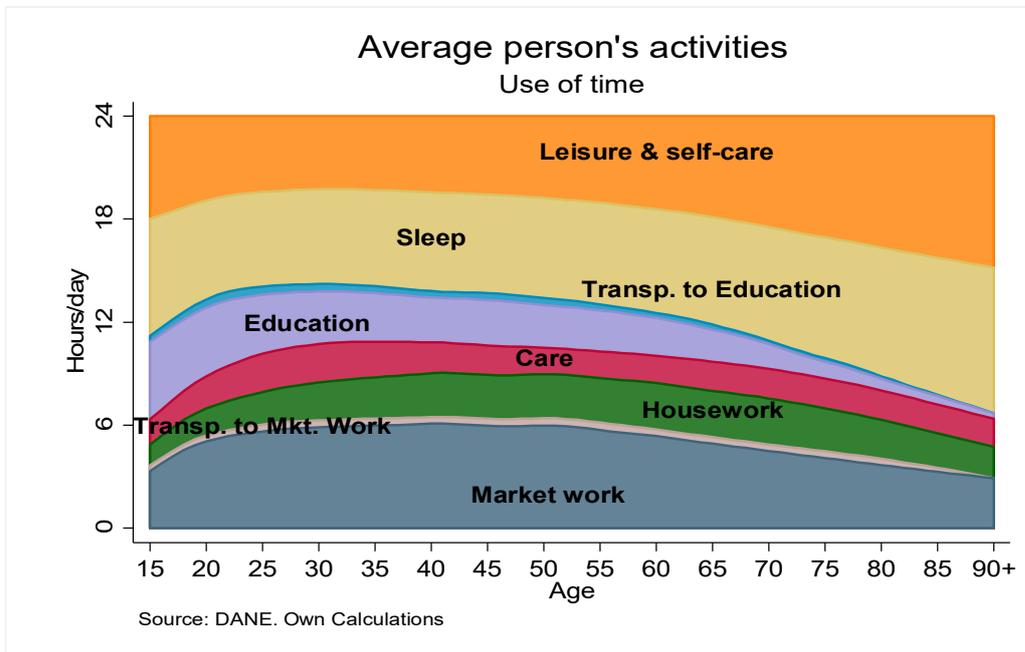
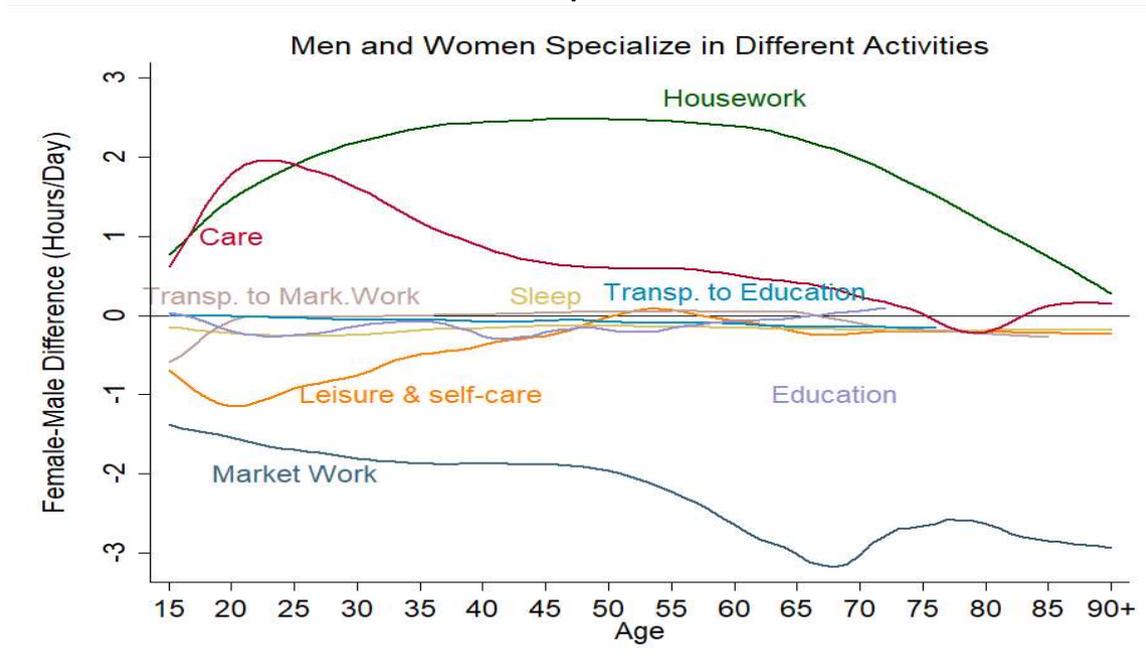


Figure 2 depicts the difference between the number of hours devoted by women and men to any given activity, i.e., females'-males' hours. A positive figure implies that the event is performed mostly by women, while a negative one denotes that the event is performed mainly by men.

Figure 2. Hourly distribution of time per NTTA Activity, by gender in Colombia-2012/2013



Source: DANE, Own Calculations.

Figure 1 and Figure 2 reveal the intrinsic differences between genders and ages. As expected, people in their working ages, 15-60, devote more time to market work. Time dedicated to education falls as age increases. However, housework, sleep, leisure, and self-care remains important over the lifecycle and increases with age. Men devote more time to market work, while women dedicate more hours to housework and caring activities. Leisure and self-care are predominantly male activities while time spent traveling to education and working facilities is relatively similar for men and women. Finally, caring is reported separately from total unpaid housework because it is the housework activity that absorbs most of the time. In the Colombian case, as observed in other countries, caring is a female activity at almost all ages. Caring consumes many hours of female work from early ages, virtually since age 15, and peaks at age 20. The difference between men and women is nearly two hours per day.

The gap shrinks after age 30, but it remains a predominantly female activity until age 75.

Indeed, between ages 75 to 82 men devote more time than women for caring, an unusual finding only reported in urban Costa Rica (Jiménez-Fontana, 2016). There is available evidence that retiree men in the United States and France slightly increase the time devoted to unpaid housework (including inter-household childcare), but childcare is not a male-dominated activity at any age (Stancanelli & Van Soest, 2012; Coile, 2013). Moreover, in 14 European countries that use the NTTA methodology, Vargha et al. (2017) found that inter-household caring from grandparents (ages 60 to 75) to grandchildren never increases or even exceeds 20 minutes per day.

Overall, the results portray the traditional gender segregation roles where women devote more time than men to unpaid domestic work, but men dedicate more hours to working paid activities.

Following, the NTTA methodology, we proceed to impute a market price using the available information of all NTTA activities (Table 2). Regarding income, the ENUT has various types of labor and non-labor income-related questions. We considered two types of income: (i) wages perceived in the primary and secondary job and (ii) income originated from pension funds. Using the monthly available income data, we calculated a per hour rate, and later we aggregate it to compute the total income per week for each individual.

We would have liked to impute wages by comparing an NTTA activity with a corresponding labor activity (i.e., matching cutting hair at home with a barber wage). However, it is not possible to impute haircutting with a barber's salary because of the high level of aggregation of the ENUT. Hence, to value time we used the estimated income per hour and imputed it accordingly to the number of hours spent in NTTA categories. This strategy applies to working individuals, but there are a non-negligible number of individuals in working age

that report no income.⁴ To impute values on NTTA activities for individuals with no income we matched each worker with working individuals based on four observable characteristics age⁵, genre, education⁶, and region⁷. This strategy applies to both household production and consumption, presented later on.

⁴ In Colombia the working-age starts at 12 years old.

⁵ The age categories are arranged per five year periods: 10-14, 15-19, etc. until 90+.

⁶ The education categories are: 1 None, 2 Preschool, 3 Elementary School, 4 Middle School, High school and technological school without graduation, 5 technological school with graduation, 6 university, and 7 graduate school.

⁷ The region categories are: Bogotá, San Andres plus Atlantic region, Central, Pacific and Eastern region.

Table 2. Description of NTTA Categories

NTTA Categories	Description
Laundry	Includes sewing and clothing repair.
Cooking	Includes food and drink preparation.
Household maintenance and repair	All maintenance and repair activities such as repairing home appliances, vehicles, and building in the household
Household management	Includes finances, scheduling, coordinating, and related telephone calls.
Pet care	Not veterinary care.
Purchasing goods and services	All purchasing goods and services activities such as buying food, clothing, toiletries, and others.
Childcare (0-5)	Beyond care activities, playing, reading stories/books and going to the park are included.
Care (6-18)	Includes feeding, cleaning, dressing, giving medicines and taking a household member to the doctor.
Care (19-64)	Includes feeding, cleaning, dressing, giving medicines and taking a household member to the doctor.
Eldercare (65+)	Includes feeding, cleaning, dressing, giving medicines and taking a household member to the doctor.
Travel	Includes time-related care activities for household members and purchasing goods and services.

Source: NTA/CWW Time Use and Gender

Results for production profiles

The men and women production profiles, measured by time or money value, do not differ substantially from results reported for other countries (Figure 3). Females produce more unpaid household activities than men do at all ages, with a significant gap at productive ages, while men dedicate more time to paid labor than women do. Indeed, the number of hours that women age 20 to 70 devote to unpaid work exceeds that of men by a factor of more than three. The gap, particularly harsh when women are in their late twenties, shrinks at 70 and older, but never fully closes.

When measured in COP\$ (left panel), the gap is minimal only before age 15 and after age 70.⁸ The pattern depicted, where women dedicate much of their time to unpaid housework, is similar to that reported for advanced economies (Zagheni et al., 2014; Vargha et al., 2017) and developing nations (Jiménez-Fontana, 2017; Ullmann & Maldonado, 2015).

Figure 3. Value of time Household Production, by gender in Colombia- 2012/2013

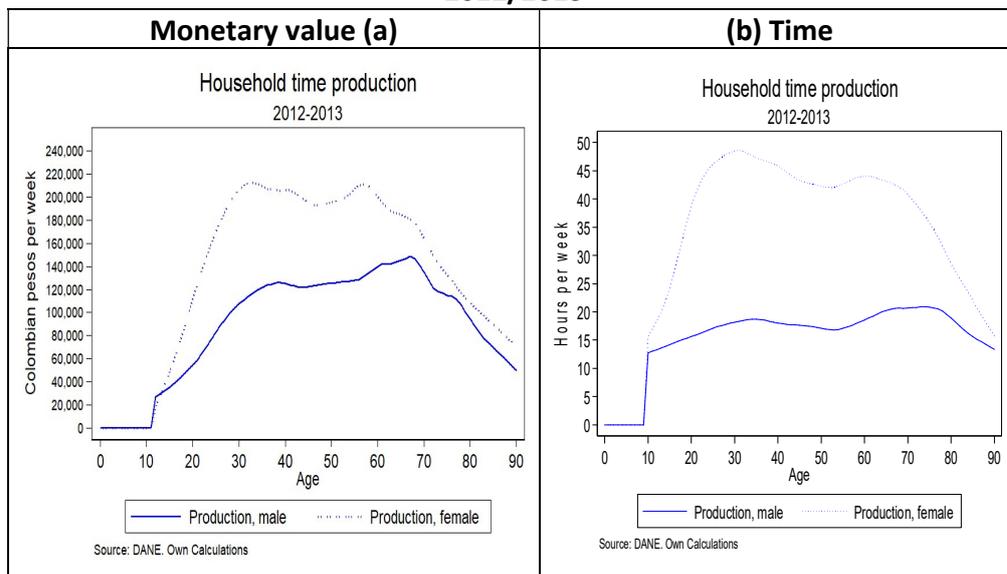
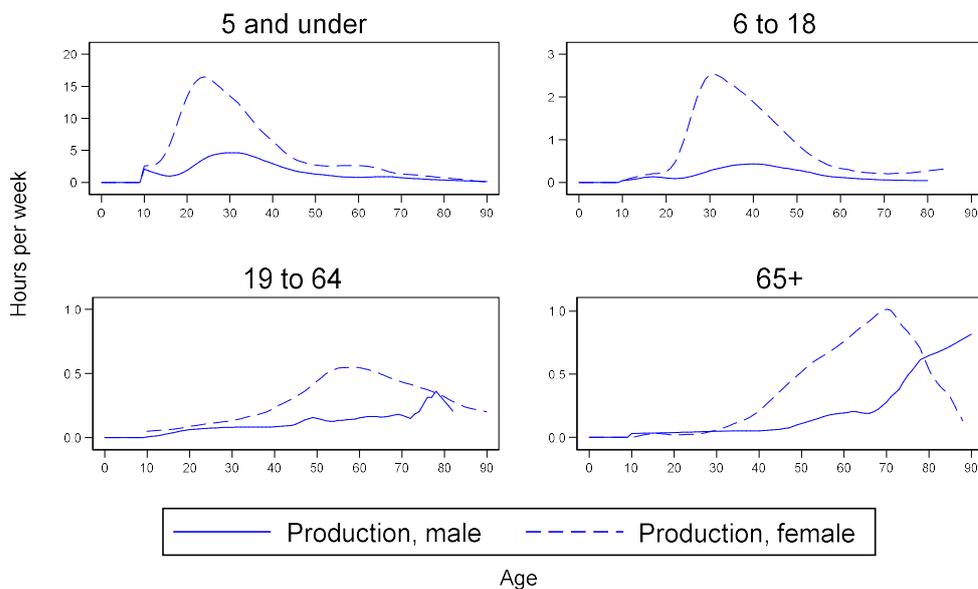


Figure 4 decomposes the caring production time use. As noted earlier the ENUT allow us to consider separately caring per group age. Not surprisingly, the majority of caring time is devoted to children aged 5 and under. However, note that the female-male ratio of caring time to children is much larger than that detected in panel (b) of Figure 3. Women between 20 to 25 years dedicate four to five times more to children than men. Children between 6 and 18 are taking care almost exclusively by women, mainly when they are between their mid-twenties and their early forties.

⁸ The weekly minimum wage for 2013 in Colombia was COP\$147,375.

Figure 4 also reveals that both men and women dedicate little time to care for adults, even elders. However, even in these cases, women devote more time. These findings suggest that childcare alternatives can help promote women's time supply towards paid labor activities.

Figure 4
Care Production (Time)
2012-2013



Source: DANE. Own Calculations.

Results for consumption profiles

The NTTA consumption profiles require that care and non-care activities be identified to impute time accurately. In the case of non-care activities, we divided the time produced by each member equally among all household members, as they all benefit from these activities (laundry, cooking, pet care, goods and service purchase, travel and household maintenance and management).

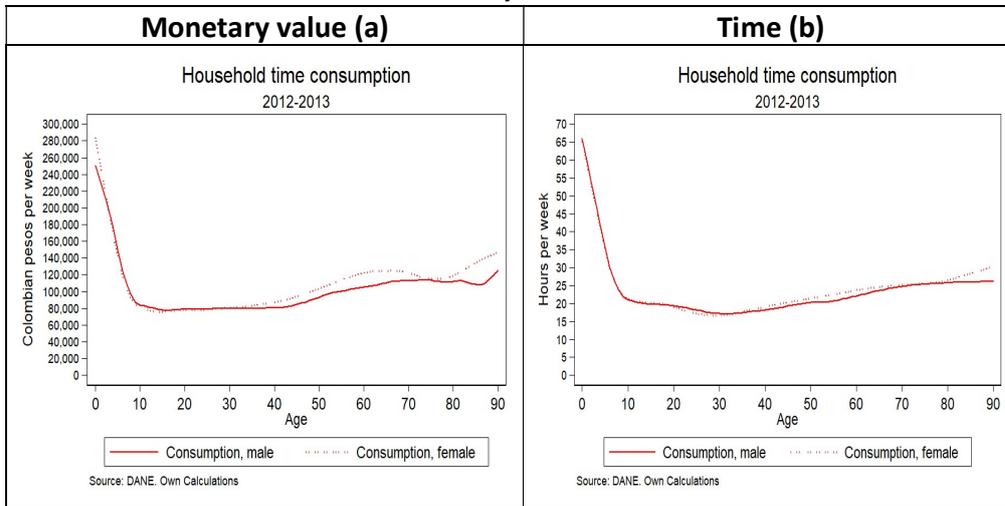
There is no way to match directly caring activities when the event benefits other households. To impute consumption of other activities related to other households (such as cleaning, travel, maintenance) we identified the

population in the target region and divided the value of the time produced by each household member by the number of those other households in the same geographical region. Regarding care related activities on other households we also divided time produced by age instead of region, that is, we split the time produced of childcare by the number of children outside the household.

ENUT not only reports how much time each household member spent in caring activities, but it also captures who is receiving such care. We exploit this information to compute the time consumed by each individual. However, there are three variables related to childcare with no information on the receiver of the time produced. These are variables associated with playing, reading stories/books and going to the park with a child under age 5. We dealt with this by calculating the time produced by each household as follows: (i) Add the production time of all household members that report any of these three activities (playing, reading, and park). (ii) Estimate a regression using as the dependent variable the time produced in (i), as a function of the number of boys and girls aged 0-5 in each household. (iii) We allocated the time to each age/gender group using the coefficients as weights.

Figure 5 presents the results, which as in the production case, are relatively standard to those reported in other countries. Males and females have similar age-patterns for household consumption at all ages, with minimal differences for the elder.

Figure 5. Value of time Household Consumption, by gender in Colombia-2012/2013

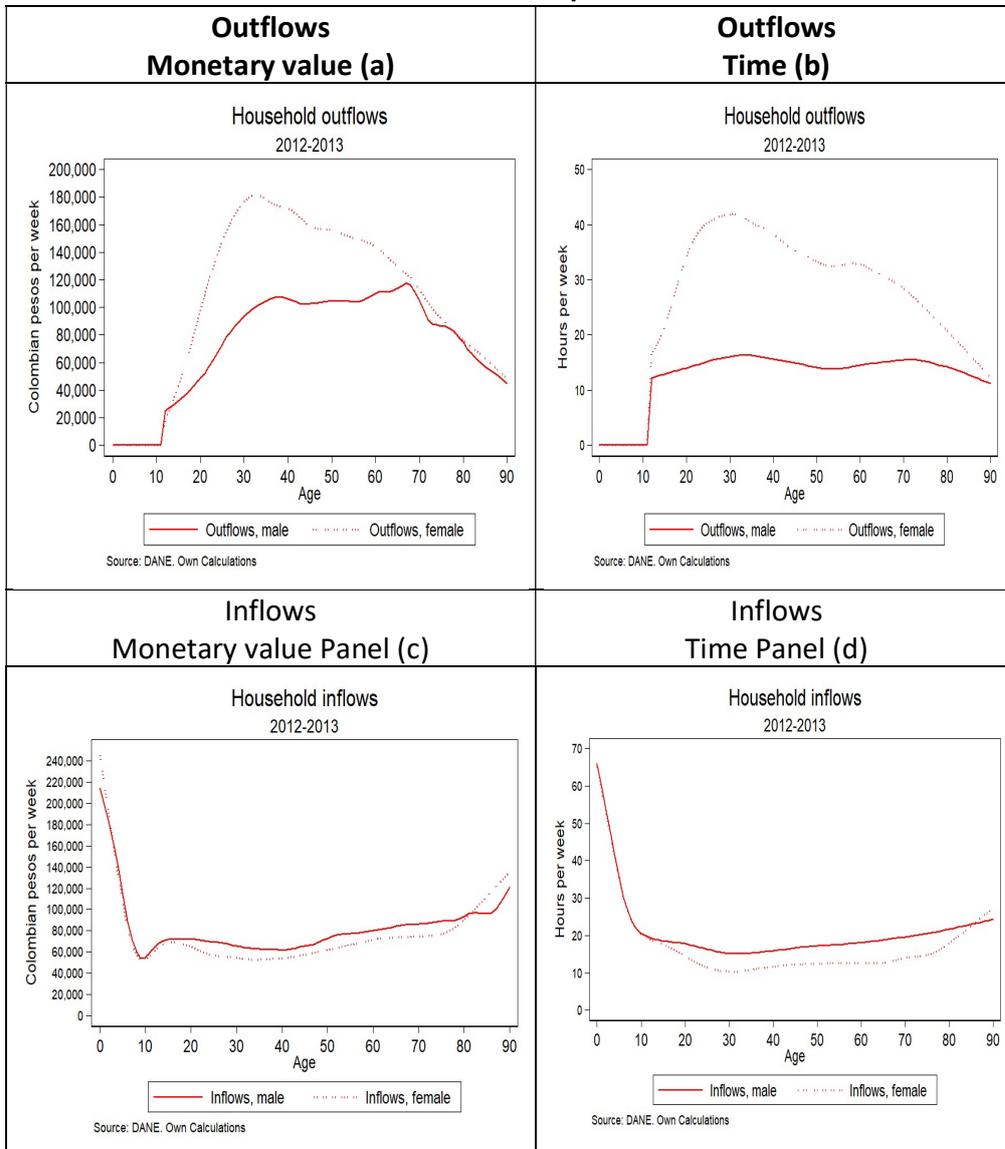


Results for transfer profiles

The transfer profiles are built based on the consumption and production profiles. The methodology defines a transfer outflow as the time produced but not consumed by a household member. Care related activities are merely transfer outflows. The outflows of general household activities like cleaning and cooking are calculated as the time each person produces net of the time consumed.

Similarly, a transfer inflow is the time consumed but not produced by each household member. Care received is a transfer inflow. Inflows for general household activities are calculated as the time consumed minus the time produced by each person. Given the above definition, production equals consumption and inflows equals' outflows.

Figure 6. Value of time Household Outflows and Inflows, by gender in Colombia-2012/2013



Females' outflows tend to be larger than men outflows, particularly at working ages. In fact, regarding time, the male outflows age profile tends to be constant, while female's peak in the early thirties and then constantly descends over time. Regarding money value, males' outflow increases with age, but it is always smaller than females'. It converges to the females'

outflows by the late sixties suggesting a gender gap regarding how time is valued between male and females. Differences in inflows are subtle compared to outflows, but males benefit slightly more than females.

Conclusions

Colombian time use patterns are not that dissimilar from those reported in other countries. Male devote more time to paid labor market activities, leisure, and sleep; while women dedicate more time to unpaid domestic housework. The gap, true at all ages, is disproportionately large for unpaid housework, particularly for childcare.

One of the chief virtues of the NTTA methodology is the generated estimates of time consumption and production per gender over the life cycle. Consumption understood as the amount of time received by a household member from unpaid activities shows no significant differences per gender. Similarly to Costa Rica or European countries (Jiménez-Fontana, 2016; Vargha et al., 2017), in Colombia, the equality in the consumption of unpaid activities prevails.

Housework production, defined as the amount of time that an individual over ten years old dedicates to all unpaid activities in a given household, reveals a very different pattern: women devote significantly more time than men to such activities.

The difference in production is substantial in caring for children five and under. At some point, in their twenties, women devote a significant fraction of time dedicated to the unpaid activities to caring for small children. Men contribute proportionately much less. Consequently, women can offer less labor supply hours, leaving them in a more vulnerable situation as they lack

access direct labor income and typically will have no access to a pension at retirement ages.

As a result, considering the net effect of production minus consumption, women hold a considerable burden of unpaid domestic housework. This situation requires the State to promote a social change in gender patterns time use for both men and women. Men can dedicate more time to unpaid activities typically done by women, allowing the latter to have some access to the labor market. However, this type of initiatives has not been very successful in other countries and, having found that for young women most of their time is devoted to childcare, action is required.

A natural alternative is to design policies intended to free childcare time for women. This requires a strategy to supply childcare options outside the household. Most options need a funding scheme, whose implementation requires in-depth cost-benefit analysis beyond the scope of this paper.

Childcare networks can be expanded via payroll deductions for companies that provide childcare services in their facilities. These onsite childcare centers are relatively common in tech companies in the United States. To implement this kind of amenities in Colombia requires State support, particularly at early stages.

Currently, Colombia has a public childcare program known as “community moms” (*madres comunitarias*). Targeted to low-income women, the objective of the program is to create access to childcare centers for women in the labor market. The program could be expanded using grandparents which, as found in this paper, dedicate relatively little time to children. Noting that around 70% of elders in retirement lack pension, designing a program where grandparents are paid to take care of children while moms’ work can aid in changing time use patterns. Indeed the subsidized pension system known as BEPS-*Beneficios Económicos Periódicos* (Periodical Economic Benefits) can be

expanded to include this program. BEPS, a system designed for very low-income population, require that individuals contribute to the fund, whenever they can as long as it is less (in 2017) than COP\$990.000 (US\$330) a year. The government will add to their contribution an extra 20%. Following recent regulation (Decreto 295, 2017) where a third party can contribute to the individual's fund, one can think of a scheme that benefits both the working mother and grandparents without a pension. The mother can be the third party, and the government would add the extra 20% if grandparents take care of the children (maybe their grandchildren).

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