Valuing Unpaid Care Work in Sri Lanka using the National Time Use Survey 2017: First Estimates
Dileni Gunewardena[1] and Ashvin Perera

Introduction

Economists and policymakers are becoming increasing aware that unpaid care work is essential for the functioning and growth of the production sector of the economy. When unpaid work is not valued, a large amount of work that contributes to the economy and human wellbeing is rendered invisible. Moreover, movements between paid and unpaid work result in misleading estimates of the magnitude of the economy. In early editions of Paul Samuelson's textbook *Economics*, he points out that if a man married his maid, then all else equal, GDP would fall. Similarly, during a recession, many services including meals and childcare move from the paid economy to the unpaid economy, and result in lower measured GDP; but the productive work continues to be done, it is just not counted. And during economic recovery, as this work moves back into the paid sector, the estimate of GDP rises, resulting in an overvaluing of production. Thus, valuing care work is important because it recognizes the worth of unpaid care and promotes more "accurate and comprehensive" valuation of the work that takes place in economies (UNDP 1995). This is especially important in designing and evaluating policy. Additionally, Folbre (2006) and other feminist economists have pointed out that recognising unpaid care work and its distribution between men and women is important for understanding unequal bargaining power within households and its impact on the allocation of time and money by women. Recognizing the economic value of unpaid care strengthens the argument that those who provide unpaid work to family or household members are entitled to a fair share and control over income generated by those members (Budlender 2013).

Unpaid care work is increasingly becoming a focus of attention in Sri Lanka. In her maiden speech in parliament in September 2020, NPP MP Dr. Harini Amarasuriya drew attention to the important economic role played by those who engage in unpaid care. In an important step towards highlighting the value of unpaid work, the Department of Census and Statistics conducted a nationally representative Time Use Survey data in 2017, and the related report provides calculations of unpaid work in Sri Lanka. However, the report stops short of a valuation of unpaid work and thereby *recognising* its value.[2] This study is a beginning toward remedying this gap. It uses published data from the report on time use in relation to unpaid care work, as well as wage data calculated from the latest available Labour Force Survey in order to estimate economic values of unpaid care. To the best of our knowledges, this is the first attempt to do provide estimates of the value of unpaid care work using the National Time Use Survey of 2017 (henceforth referred to as NTUS 2017).

---

[1] Dileni Gunewardena is Professor of Economics at the University of Peradeniya and Non-resident Fellow at Verite Research, and holds a doctorate in Economics from American University, Washington, D.C. Ashvin Perera is an Analyst at Verite Research and has a Bachelor's Degree in Mathematics and Economics from the University of London. Data for the time use analysis was extracted from the Time Use Survey 2017 Report of the Department of Census and Statistics and wage data was extracted from the Labour Force Survey 2019 with the permission of the Department of Census and Statistics. This research was supported by the Open Society Foundation, the Program in Gender Analysis in Economics at American University and the University of Toronto. We are grateful to Mieke Meurs for helpful comments on a previous draft.

[2] The 'triple R' approach of recognizing, reducing and redistributing women's unpaid work was first articulated by Diane Elson, and is elucidated on in Elson (2017).

Definitions, methods and data

Margaret Reid's third party criterion provides a useful way of identifying an activity performed by an individual as work: it may be done by a third person or replaced by market goods without affecting the utility value returned to the individual (Reid, 1934:11). Elson (2000) notes that unpaid care work is *unpaid* because it arises out of societal obligations, it is *care* because it relates to well-being, and it is *work* because it has time and energy costs. Unpaid work can be categorized into three sub-categories, "unpaid household maintenance (housework), unpaid care of persons in one's own household, and unpaid community service and help to other households" (Budlender 2013). According to the International Classification of Time Use Statistics (ICATUS) these three categories are considered productive work that is considered outside the system of national accounts (non-SNA). In this note we refer to all three categories as unpaid work or unpaid care work which we use interchangeably.

Methods

Valuing time use comprises two main steps. The first comprises calculating measures of time use. The second involves valuing these measures by multiplying them by appropriate wage rates. To compute the monetary value of unpaid work performed by persons aged 10 years and older, we follow Suh et al. (2020) and use the following formula:

$$V = \sum_{i=1}^{N} \sum_{j=1}^{M} P_i T_{ij} W_j$$

where

V = Annual monetary value of unpaid housework and caregiving services;

N = Sample size;

M = Number of unpaid housework and caregiving activities;

P_i = Sampling weight to extrapolate to the whole target population;

T_{ij} = Number of hours spent on unpaid housework and caregiving activities from the group of activities j per 24-hour period, scaled up to annually for the individual i;

W_j = Hourly wage of the specialized occupations in group j for the valuations, using the generalist wage or specialist wage.

We calculate the above value and present it as a percentage of Gross Domestic Product.

Measuring unpaid work: Mean actor time vs. Mean population time

When calculating *averages* of unpaid work, two common approaches are used. That of calculating the mean actor time – that is any time spent on the activity by those who engage in the activity – and that of mean population time, which calculates the average time spent on the activity for the entire population, regardless of whether they engaged in the activity or not. Intuitively, this is a question of whether zeros are counted (in the numerator and the denominator) or not. When those who spend zero time on an activity (for example, childcare, because there are no children in their household) are included in the denominator, as in the calculation of the mean population time, the estimate of the time calculation appears unrealistically small, but this is because it is averaged across the entire population and not calculated just for those who engage in the activity. The latter calculation is referred to as mean actor time. Which measure is used depends on the purpose for

which the measure is being used, and for this reason, both measures are calculated, and reported in the National Time Use Survey 2017 (NTUS2017) Report (DCS, 2020).

Valuing unpaid care work: Imputing value to measures of care work
Unpaid care work can be valued either in terms of the input (mainly labour) or the output (the value of the service that is produced). With an input based method, it can be valued at the income that is foregone in order to undertake the work (opportunity cost method), or at cost incurred to replace the work (replacement method). The opportunity cost method has been criticized because the value of the service being produced will vary vastly depending on who is producing it. The replacement cost method assumes that household members and their replacements are equally productive. The more widely applied of these methods is the replacement method.[3] In using a replacement method, one could apply a generalist wage, for example, the wage of a housekeeper, or that of a specialist, depending on the tasks, e.g. cook, plumber, etc., or the minimum wage. Budlender (2013), Suh (2020) and UNECE (2017) discuss the pros and cons of each method. In this study, we follow the methodology implemented by Suh et al. (2020) and Suh (2021) and use an input based, replacement cost methodology, using both the generalist and specialist wage approaches. The generalist approach uses one "generalist" wage at which all activities are valued, while the specialist wage values disaggregated activities at the "specialist" wage rate – for example, using cooks to value cooking activity, childcare workers to value childcare, and healthcare assistants to value elder care. Our choices for both generalist and specialist wages are discussed in the results section.

The wages used in this study are *median pooled employee* wages. Earnings distributions tend to be clustered at the lower end of the distribution, which leads to a skewed representation of average values when using mean wages which are strongly influenced by extreme values in the right tail. Median wages are therefore typically used in these calculations, for example in studies of Nicaragua, Tanzania, South Africa and Argentina (Budlender, 2013) and South Korea (Suh, 2021) and we follow this practice. We limit our estimates to those of employees, even though the bulk of the population in developing countries are self-employed (Budlender, 2013). The difficulty with including self-employment earnings is that it also includes returns to other factors (e.g. profits). It can also be argued that from a replacement cost point of view, it is the value of wages of an employee that could be hired that is applicable. We further limited the calculation of wages to those who are employees in their stated main occupation, in order to obtain a more specific estimation of the occupational wage. Finally, we eschew gender-specific wages for pooled (male *and* female) wages. Suh et al. (2020) and Budlender (2013) use an average wage determined by pooling male and female wages, and Budlender (2013) argues that this is because the household is concerned with having the work performed rather than with the gender of the performer. Given that gender-specific wages incorporate gender bias inherent in market wages, we consider matching wages with an individual's sex to perpetuate that bias in the valuation of unpaid work. Moreover, as (Budlender, 2010) notes, the pooled wage rate is already biased downward as there is a high female concentration in care. We also note that because occupations are highly gendered, in some occupations, sample size for one or the other sex (usually male, because women predominate in paid care work as well) is too small to be reliable. Finally, we use national wages as do other studies (Budlender, 2013; Suh et al, 2020; Suh, 2021), because sample size limitations prevent us from using local (e.g. district) wages.

---

[3] It is also the method recommended by the United Nations Economic Commission for Europe (2017).

Data

The time use data reported in the study is from the published report of the National Time Use Survey, p. 58, Table 6.5. This data is based on the responses of nearly 17,000 respondents aged 10 and over, from 6,440 housing units selected for the fourth quarter Labour Force Survey conducted in 2017 (DCS, 2020). Time use data was obtained by providing respondents with time diaries where activities were recorded in 15 minute period time slots during a 24 hour day. For each time period, the main activity was recorded, followed by a single simultaneous activity that took place at the same time. The time use data that is reported in Table 6.5 of the NTUS Report is for main activities only, and the valuation in this note is of those activities only.[4] Activities have been categorized using ICATUS categories into the three main categories of *productive non-SNA activities:* (a) unpaid domestic services for household and family members, (b) unpaid caregiving services for household and family members, and (c) unpaid voluntary, trainee and other unpaid work. These are further subdivided into 19 sub-categories at the 2-digit ICATUS level. (DCS 2020).

Sri Lanka obtains wage and employment data through quarterly labour force surveys. Occupational information is obtained from individuals and coded using the International Standard Classification of Occupations (ISCO 08). We use all four quarters of the *2019 Labour Force Survey* to compute both *generalist* and *specialist* wages.[5] ICATUS activity codes were matched with the closest occupational codes in order to obtain appropriate wages for the estimation of specialist wages.

Results and Discussion

In what follows, we first discuss time use patterns of men and women based on the estimates presented in the NTUS 2017 Report (DCS 2020). We then discuss the estimation of generalist wages and then of specialist wages. Finally we present the valuation of time use based on these wages, and discuss the importance of these measures for policy making in Sri Lanka.

Figures 1 – 5 present the number of respondents who engaged in a particular activity, the mean actor time and the mean population by activity for all respondents 10 years and older, for unpaid care work, or "productive non-SNA work". Clearly women dominate this activity, in terms of engagement, and in terms of hours in which they engage in the activity.

Figure 1: Number of respondents who engaged in unpaid domestic services, by two-digit level of activity and sex

---

[4] It is recognized that this is a limitation of this study that it does not account for simultaneous activity. This will be accounted for in future work.,

[5] The 2019 Labour Force Survey was the latest data available from the DCS at the time of analysis.
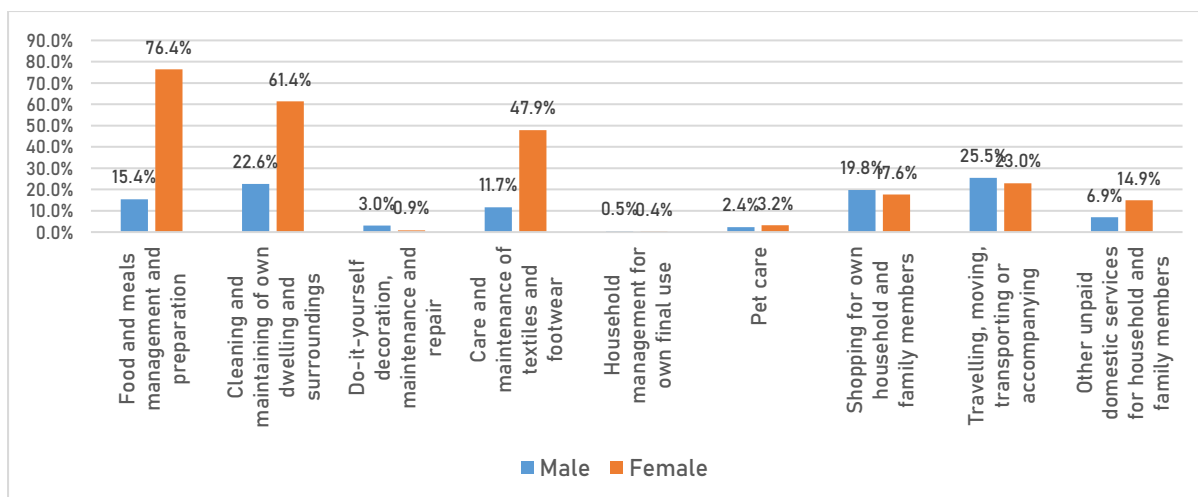
Source: Authors' calculations from *National Time Use Survey 2017* unit data.

Figure 2: Number of respondents who engaged in unpaid care services, by two-digit level of activity and sex
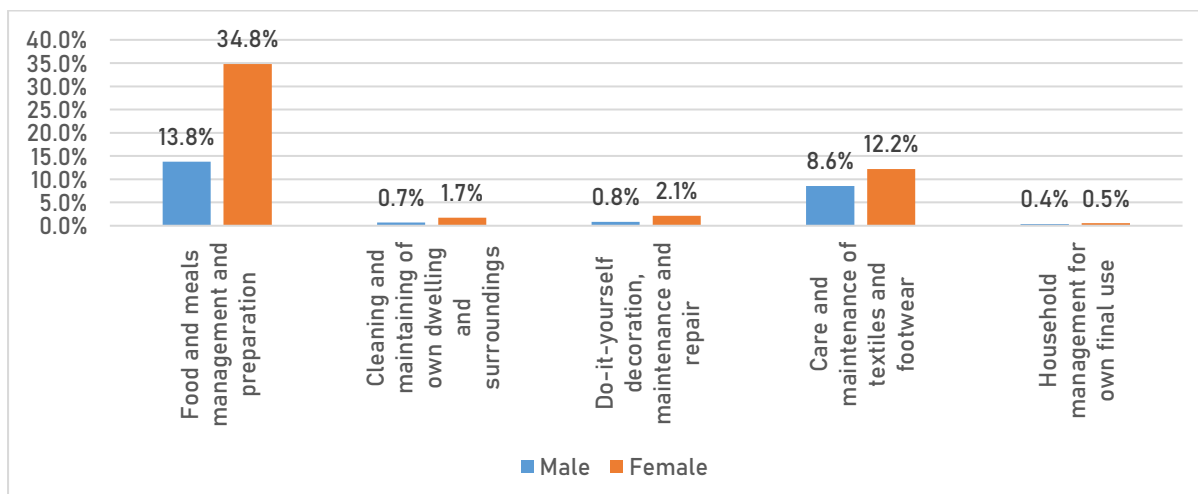
Source: Authors' calculations from *National Time Use Survey 2017* unit data.

It is evident from Figures 1 and 2 that more women than men engage in unpaid work in general, but specifically in food and meals management, cleaning and maintaining of own dwelling, care and maintenance of textiles and footwear, other unpaid domestic services, childcare and instruction, care of dependent adults and travelling related to caregiving. Male and female engagement in voluntary work (not shown) was generally low, but in most categories, women engaged in larger numbers than men.
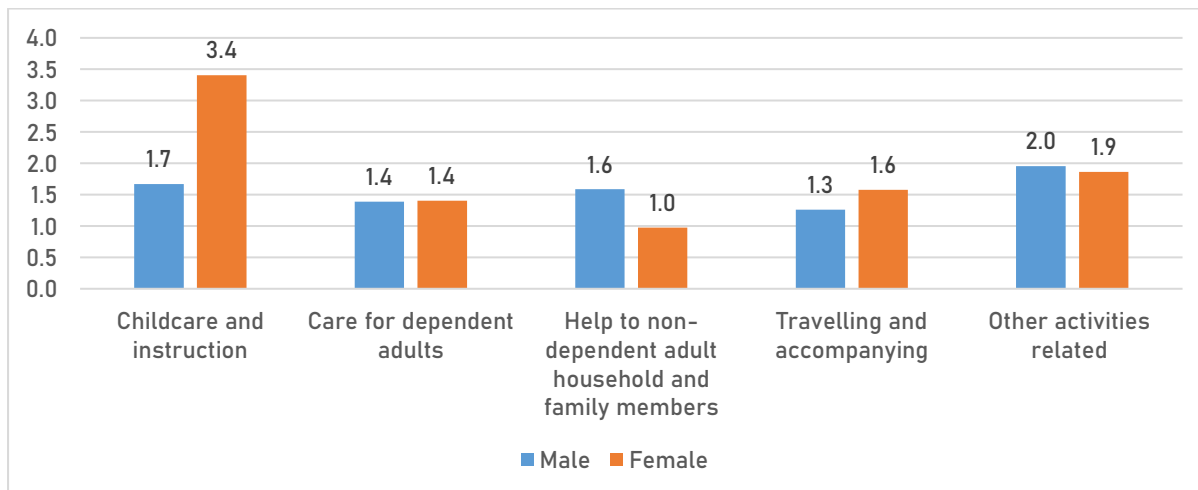
Figure 3: Mean actor time spent on unpaid domestic services, by two-digit level of activity and sex
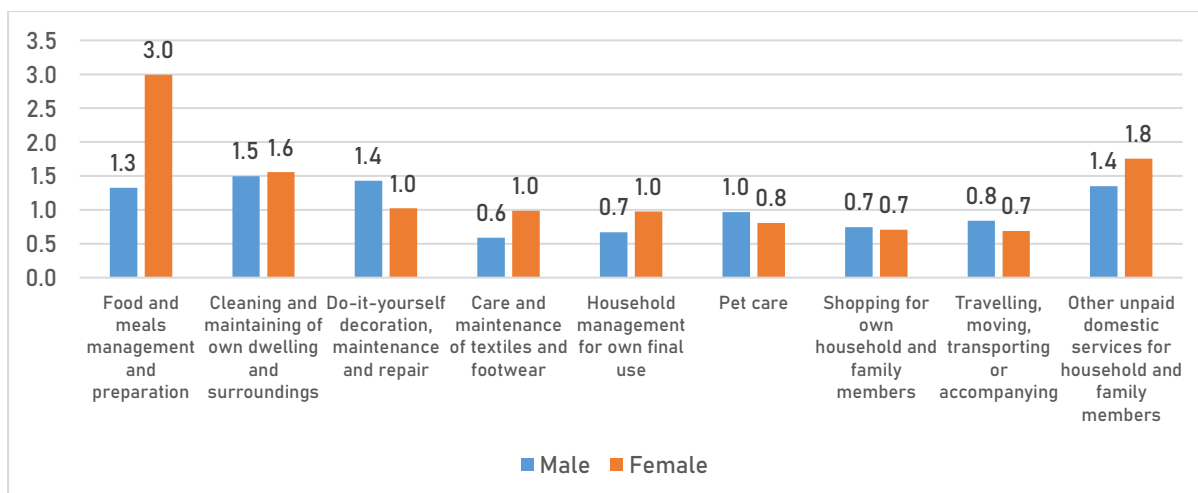
Source: Authors' calculations from *National Time Use Survey 2017* unit data.

The NTUS 2017 Report estimates that men spent 2.6 hours in total unpaid work, while women spent 6.5 hours in the same, both measured in mean actor time. The same estimates according to mean population time were 1.6 hours for men and 5.7 hours for women. Figures 3 - 5 present time use for these two measures, disaggregated at the 2-digit level. They indicate that while in most categories, women spend more time in unpaid work, the gender gap is most visible in food and meals management, care and maintenance of textiles and footwear, and childcare and instruction. Men spend more time than women in voluntary activities.

Figure 4: Mean actor time spent on unpaid care services, by two-digit level of activity and sex

Source: Authors' calculations from *National Time Use Survey 2017* unit data.

Figure 5: Mean population time spent on unpaid domestic services, by two-digit level of activity and sex
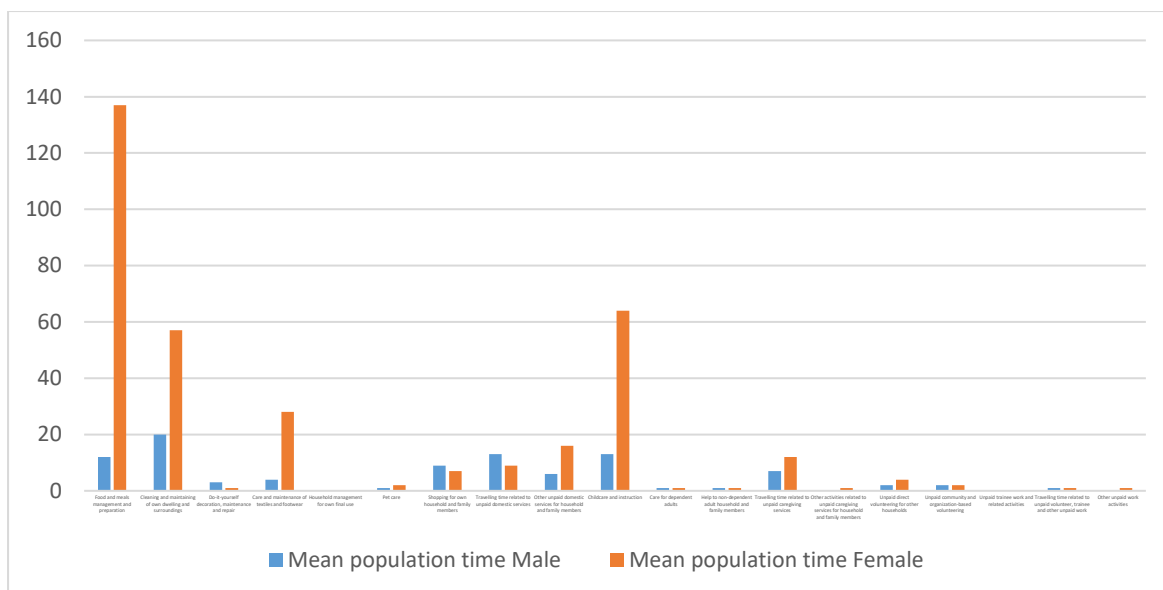
Source: Department of Census and Statistics, 2020. *National Time Use Survey 2017 Report,* p. 58: Table 6.5

*Generalist wage –*Suh (2021) uses the median wage of (a) domestic helpers and housekeepers as a lower bound calculation and the median wage of (b) primary school teachers as an upper bound. We find only one housekeeper in the LFS2019 data set, and therefore use only the category of domestic cleaners and helpers. In the upper bound category, we use early childhood educators (comparable with elementary school teachers) as an additional category to primary school teachers.

Table 1: Occupations used to calculate generalist wages

Generalist Wage Method	Occupation Used	Occupation Code
Lower Bound: Domestic and House Keeping[1]	Domestic Cleaners and Helpers	9111
Upper Bound: Specialist Teaching Jobs	Primary School Teachers	2341
	Early Childhood Educators	2342

Note 1: There is only one value for the category of domestic housekeeper in the LFS2019, so we only use the category of domestic cleaner/helper for the lower bound estimate of the generalist wage.

Table 2 provides estimates of these wages derived from the 2019 Labour Force Survey. Estimates are nationally representative averages, computed by weighting sample data with the expansion factors provided in the LFS data file.

Table 2: Generalist wages for Sri Lanka (daily wage rate), national estimates.

	Male	Female	All	Sample size
Lower Bound – domestic cleaners	824.18	600.00	615.38	255
Upper Bound – primary school teachers	1,951.65	2,051.28	2,030.77	304
Upper Bound – early childhood educators	1819.78	923.08	923.08	121
Minimum wage	500.00	500.00	500.00	-

Source: Research team calculations using unit data from LFS 2019; minimum wage from National Minimum Wage of Workers Act (Amendment) Act No. 16 of 2021

National lower bound wages are about 20 percent higher than the daily minimum wage of Rs. 500.[6] Upper bound wages using primary teachers' wages are more than three times the magnitude of lower bound wages, while early childhood educators wages are only about 1 2/3 times the lower bound estimate.

Specialist wages - To construct specialist wages, unpaid work activities are selected from the ICATUS list of activities that fall under the list of non-SNA activities. These activities are then matched to similar specialist jobs in the International Standard Classification of Occupations (ISCO 08). The purpose of the specialist wage estimation is to impute specialist wages to the specific task being considered. Table 3 presents the occupational categories (ISCO codes) that were matched to the time use activity categories (ICATUS codes), along with their descriptions.

Table 3: Unpaid Housework and Caregiving Activities, and Corresponding Occupations

ICATUS code	Activity description	Occupation	ISCO-08 Code
3	*Unpaid domestic services for household and family members*		
31	Food and meals management and preparation	Fast food preparers [a]	9411
32	Cleaning and maintaining of own dwelling and surroundings	Domestic cleaners [b]	5131
33	Do-it-yourself decoration, maintenance and repair	Domestic cleaners [b]	9111
34	Care and maintenance of textiles and footwear	Domestic cleaners [b]	9111
35	Household management for own final use	Office clerks	4110
36	Pet care	Pet groomers	5164
37	Shopping for own household and family members	Office helpers [c]	9112
38	Travelling, moving, transporting or accompanying goods or persons related to unpaid domestic services for household and family members	Office helpers [c]	9112
39	Other unpaid domestic services for household and family members	Domestic cleaners [b]	9111
4	*Unpaid caregiving services for household and family members*		
41	Childcare and instruction	Childcare workers [d]	5311
42	Care for dependent adults	Health care assistants [e]	5321
43	Help to non-dependent adult household and family members	Health care assistants [e]	5321
44	Travelling, moving, transporting or accompanying goods or persons related to	Health care assistants [e]	5321

---

[6] Section 03 of the Minimum Wage of Employees Act No. 03 of 2016 established a monthly minimum wage of Rs. 10,000 and a daily minimum wage of Rs. 400. The National Minimum Wage of Workers Act (Amendment) Act No. 16 of 2021 amended this act to increase the monthly minimum wage to Rs. 12,500 and the daily minimum wage to Rs. 500.

	unpaid caregiving services for household and family members		
49	Other activities related to unpaid caregiving services for household and family members	Health care assistants [e]	5321
5	*Unpaid volunteer, trainee and other unpaid work*		
51	Unpaid direct volunteering for other households	Domestic cleaners [b]	9111
52	Unpaid community and organization-based volunteering	Office helpers [c]	9112
53	Unpaid trainee work and related activities	Primary school teachers	2341
54	Travelling time related to unpaid volunteer, trainee and other unpaid work	Office helpers [c]	9112
55	Other unpaid work activities	Office helpers [c]	9112

Source: Categorization of activities is from ICATUS 2016, followed by NTUS 2017. ISCO-08 codes are from ILO https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_172572.pdf .

Notes: [a] LFS2019 had zero observations for the occupations of Chef (3434) and Cooks (5120) and only 3 observations for Kitchen assistants (3), hence the use of the other occupation in the category of food preparation assistants. Fast food preparers were included under Cooks in ISCO-88. [b] LFS2019 had only 1 observation for housekeepers (5152) and 5 observations for launderers and pressers (9121). We use domestic cleaners as the closest available, though generalist, alternative in all these cases. [d] We use office helpers and cleaners (9112) instead of domestic cleaners (9111) used by Suh (2020) for buying groceries for the family and for volunteering in village level organisations. The latter is on the basis that such work often involves *shramadana*-type activities. [d] Childcare workers are the most commonly used specialist replacement for childcare activities (Suh, 2020) and we use this category (5311). [e] We use health care assistants (5321) instead of nurses (2221) for taking care of dependent and non-dependent adults, as this would be the closest substitute in the Sri Lankan context.

Table 4: Specialist wages for Sri Lanka (daily wage rate), national estimates.

	Male	Female	All	Sample size
Fast food preparers	1500	600	975.82	34
Domestic cleaners	824.18	600	615.38	253
Office helpers	1,153.85	820.51	1,054.95	577
Health care assistants	1,457.69	1,230.77	1,257.86	100
Childcare workers	854.70	553.85	570.00	40
Primary school teachers	1951.65	2051.28	2030.77	304
Pet groomers and animal care workers	996.86	553.85	800	04[1]

Source: Research team calculations using unit data from LFS 2019.

1. Sample size for pet groomers in the LFS 2019 was very small, hence estimates of wages are likely to be imprecise. However, in the absence of a close substitute we use the wages estimated from this data.

Imputed value of care work in Sri Lanka

We next compute the monetary value of unpaid care work, following the procedure in Suh (2021) given in equation (1). We compute the *daily average* monetary value of unpaid work for the average person in the sample as well as the *total annual* monetary value of unpaid work for the entire country. We present the latter as a percentage of Gross Domestic Product (GDP). Results are presented in *Table 5* below. All estimates are valued using the same wage for men and women, as we explain above. Thus, differences between the value of unpaid work done by men and women arise from differences in their average time use, and their engagement in unpaid work.

The value of unpaid work done by the average person when valued at a generalist wage ranges from a lower bound of Rs.248.72 per day to an upper bound of Rs.820.77 per day, with the valuation using a specialist wage lying in between at Rs.322.15. Valuing unpaid work using the minimum wage brings the lowest contribution at Rs.204.17. The contribution of the average man ranges from Rs.98.96 (minimum wage valuation) to Rs.401.92 (generalist wage, upper bound). Owing to her larger contribution of time, the valuation of the average woman ranges from Rs.358.33 to Rs.1455.39, over three and a half times that of the average man. The contribution of this work to GDP ranges according to the valuation metric from 10.3% to 42% of GDP. In other words, if unpaid work were included in the accounting of GDP, GDP would at the very least increase by ten percent, and in an upper bound estimate, increase by almost half. What is remarkable, though unsurprising, is that only 2% of the lower bound estimate of 10% and 8.3% of the 42% contribution to GDP is made by men. On the contribution of women alone, GDP would increase by 8.6% in the lowest case scenario, and by 34.8% in the highest case scenario.

Table 5: Value of care work in Sri Lanka

	Male	*Female*	*All*
Average daily value in rupees			
Generalist wage			
Lower bound – Domestic cleaner	121.79	441.02	248.72
Upper bound – Primary school teacher	401.92	1455.39	820.77
Upper bound – Early childhood educator	182.69	661.54	373.08
Minimum wage	98.96	358.33	204.17
Specialist wage	164.90	577.01	322.15
Total annual value, as a % of GDP*			
Generalist wage			
Lower bound – Domestic cleaner	2.4	10.3	12.7
Upper bound – Primary school teacher	8.1	33.8	41.9
Upper bound – Early childhood educator	3.7	15.4	19.0
Minimum wage	2.0	8.3	10.3
Specialist wage	2.1	12.0	14.1

Source: Research team calculations using reported data from NTUS2017 and estimates from LFS2019. GDP estimate of Rs. 15,016 billion in 2019 was obtained from Central Bank (2021) at https://www.cbsl.gov.lk/en/sri-lanka-economy-snapshot

Conclusions and policy implications, limitations and next steps

The valuation of unpaid work conducted in this paper revealed that the value of unpaid house work, care work and voluntary work that is conducted in Sri Lanka is by no means negligible, having a value addition equal to 10.3 percent of GDP in the lowest scenario (minimum wage valuation), and 42 percent of GDP in the best scenario. More importantly, the vast majority of this work is conducted by women, who contribute a value added ranging from 8.6 percent (lowest case) to 35 percent (best case) of GDP. Taking into account the fact that productive SNA activities, i.e. the activities that comprise GDP, would not be able to function without the support of the productive non-SNA activities valued in this paper, these results strongly make the case for the recognition of the unpaid work that is largely done by women.

The estimates of value of unpaid work in this study are derived from measures of time use that are based on the main activities that individuals engaged in during a 24 hour day. However, activities such as childcare are often conducted simultaneously with other activities, and these simultaneous activities have not been included in the estimates calculated in our study. We plan to undertake this as a next step.

Estimates of the value of unpaid work can be used in policy tools such as care-expanded social accounting matrices and computable general equilibrium models. For instance, such exercises in Turkey (Kim, İlkkaracan and Kaya, 2019) and seven OECED countries (De Henau and Himmelweit, 2020) it was revealed that expanding care infrastructure had more potential for employment creation than a construction boom. We plan to expand this avenue of research to eventually analyse macroeconomic policy using care-extended computable general equilibrium models.

References

Beneria, L., Berik, G. and Floro, M., 2016. *Gender, Development and Globalization: Economics as if all people mattered, 2nd edition.* New York: Routledge, p. 198.

Budlender, D., 2013. What Do Time Use Studies Tell Us About Unpaid Care Work? In Time Use Studies and Unpaid Care Work. *UNRISD*.

Central Bank of Sri Lanka. 2021. *Annual Report 2020.* Colombo: Central Bank of Sri Lanka.

Charmes, J., 2019. *The Unpaid Care Work and the Labour Market. An analysis of time use data based on the latest World Compilation of Time-use Surveys.* International Labour Office – Geneva: ILO.

De Henau, J. and Himmelweit, S., 2020. *A care-led recovery from Coronavirus*. Women's Budget Group.

Elson, D., 2000. Progress of the World's Women 2000: UNIFEM Biennial Report, New York: UNIFEM

England, P., Budig, M. and Folbre, N., 2002. Wages of Virtue: The Relative Pay of Care Work. *Social Problems*, 49(4), pp.455-473.

Floro, M., 2021. Time Allocation and Time Use Surveys. In: G. Berik and E. Kongar, ed., *The Routledge Handbook of Feminist Economics*, 1st ed. London: Routledge, pp.148-156.

Folbre, N., 1995. "Holding hands at midnight": The paradox of caring labour. *Feminist Economics*, 1(1), pp.73-92.

Folbre, N., 2006. Measuring Care: Gender, Empowerment, and the Care Economy. *Journal of Human Development*, 7(2), pp.183-199.

Ilkkaracan, I., Kim, K., Masterson, T., Memiş, E. and Zacharias, A., 2021. The impact of investing in social care on employment generation, time-, income-poverty by gender: A macro-micro policy simulation for Turkey. *World Development*, 144, p.105476.

Reid, M., 1934. *Economics of Household Production*. New York: J. Wiley & Sons.

Suh, J., 2021. Estimating the Unpaid Care Sector in South Korea. *CWE-GAM Working Paper Series: 21-03*.

Suh, J., Dorji, C., Mercer-Blackman, V., and Hampel-Milagrosa, A., 2020. Valuing Unpaid Care Work in Bhutan. *ADB Economics Working Paper Series No*. *624*
United Nations Economic Commission for Europe, 2017. *Guide on Valuing Unpaid Household Service Work.*