

Donehower, Gretchen

**Working Paper**

## Gender and the total work of older workers in Asia

ADB Economics Working Paper Series, No. 687

**Provided in Cooperation with:**

Asian Development Bank (ADB), Manila

*Suggested Citation:* Donehower, Gretchen (2023) : Gender and the total work of older workers in Asia, ADB Economics Working Paper Series, No. 687, Asian Development Bank (ADB), Manila, <https://doi.org/10.22617/WPS230213-2>

This Version is available at:

<https://hdl.handle.net/10419/298133>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/3.0/igo/>

# GENDER AND THE TOTAL WORK OF OLDER WORKERS IN ASIA

*Gretchen Donehower*

**NO. 687**

June 2023

**ADB ECONOMICS  
WORKING PAPER SERIES**

ADB Economics Working Paper Series

## Gender and the Total Work of Older Workers in Asia

Gretchen Donehower

No. 687 | June 2023

Gretchen Donehower (gdonehower@gmail.com) is a research specialist at the Center for the Economics and Demography of Aging at the University of California at Berkeley and an adjunct senior fellow at the East-West Center in Honolulu, Hawaii.

The *ADB Economics Working Paper Series* presents research in progress to elicit comments and encourage debate on development issues in Asia and the Pacific. The views expressed are those of the authors and do not necessarily reflect the views and policies of ADB or its Board of Governors or the governments they represent.



Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO)

© 2023 Asian Development Bank  
6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines  
Tel +63 2 8632 4444; Fax +63 2 8636 2444  
[www.adb.org](http://www.adb.org)

Some rights reserved. Published in 2023.

ISSN 2313-6537 (print), 2313-6545 (electronic)  
Publication Stock No. WPS230213-2  
DOI: <http://dx.doi.org/10.22617/WPS230213-2>

The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by ADB in preference to others of a similar nature that are not mentioned.

By making any designation of or reference to a particular territory or geographic area, or by using the term “country” in this publication, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

This publication is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <https://creativecommons.org/licenses/by/3.0/igo/>. By using the content of this publication, you agree to be bound by the terms of this license. For attribution, translations, adaptations, and permissions, please read the provisions and terms of use at <https://www.adb.org/terms-use#openaccess>.

This CC license does not apply to non-ADB copyright materials in this publication. If the material is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. ADB cannot be held liable for any claims that arise as a result of your use of the material.

Please contact [pubsmarketing@adb.org](mailto:pubsmarketing@adb.org) if you have questions or comments with respect to content, or if you wish to obtain copyright permission for your intended use that does not fall within these terms, or for permission to use the ADB logo.

Corrigenda to ADB publications may be found at <http://www.adb.org/publications/corrigenda>.

## ABSTRACT

In Asia, aging countries with slow population growth worry about a lack of workers in the future and see older people's labor as a potential solution. However, this leaves out the work that many older people already do—unpaid care work. Drawing on data from Bangladesh, India, Mongolia, and Thailand, the estimates in this paper show that older people, especially older women, are doing a great deal of work caring for others. In this case, policies that aim to increase overall market labor force effort by increasing the market labor of older people may underachieve their goals if they do not account for the older people's unpaid care work responsibilities. Finally, we use the estimates of the older people's unpaid care work to think about investments in the paid care economy that might be needed to replace unpaid care work of the older people if they increase labor market effort but not total work. These simple calculations indicate that the scale of investment required is manageable.

**Keywords:** older workers, unpaid care work, care economy, labor supply

**JEL codes:** J13, J14, J22

---

The author thanks her colleagues at the National Transfer Accounts/Counting Women's Work research team at the University of Dhaka and the International Institute for Population Sciences for sharing their estimates. This paper was funded by a grant from the Japan Fund for Prosperous and Resilient Asia and the Pacific and administered by the Asian Development Bank (ADB) under the technical assistance project on Challenges and Opportunities of Population Aging in Asia: Improving Data and Analysis for Healthy and Productive Aging. The author presented the paper at the joint seminar of ADB's Economic Research and Regional Cooperation Department (ERCD) and the Gender Equity Thematic Group of the Sustainable Development and Climate Change Department (SDTC-GEN) in October 2022. The author gratefully acknowledges useful feedback, review, and comments from ADB resident missions in Bangladesh, India, Mongolia, and Thailand.

## **1. INTRODUCTION**

### **1.1. The Gendered Economy and the Measurement of Unpaid Care Work as Work**

One of the most important facts about a person's economic life is his or her age. From age, we can surmise many other aspects of life, such as household structure, educational status, work, risk of death, and relationship to the public sector, to name just a few features. A young child, for example, is likely to live with one or two parents, not participate in education outside the household or the labor force and pay no taxes or receive few public benefits. A 40-year-old, on the other hand, is likely living with a spouse or partner and one or more children, has completed education, and is employed, earning income and paying taxes, and sending remittances to family members to support their consumption. The ability of age to tell us so much about a person's social and economic life is one of the central motivations for the National Transfer Accounts (NTA) project.

The NTA is a framework for studying the age dimension of economic activity by disaggregating national accounts by age and measuring or imputing transfers of resources during the periods when we are earning income in midlife and when we do not earn income in our young and old years. These flows occur between individuals through transfers, but also within an individual's life over time through the accumulation and disposal of assets. The NTA applies a consistent methodology across countries to map this age dimension using survey and administrative data<sup>1</sup> (United Nations 2013). The NTA project has revealed what it refers to as the “generational economy” in many countries over many different time periods, showing us how people produce, consume, share, and save resources according to age (Lee and Mason 2011). The project has yielded important theoretical and policy insights into how population change impacts economies and economic policy.

In addition to age, the NTA framework can help show us how to incorporate sex and gender into our understanding of economies. If the NTA study of the generational economy gives us important information about how economic life is organized, so too does understanding the “gendered economy.” This term has been used by many researchers to mean different things (Kelly 1991), but here we mean it to be the ways in which interaction with all facets of an economy is mitigated by gender.

However, the NTA framework for measuring generational economy has a serious limitation in extending its approach to measuring the gendered economy. The NTA is based on disaggregating national accounts by age. The NTA adds estimates of some transfer flows that are not measured in the national accounts, but only those transfers of resources that are within the production boundary of the national accounts, in other words, what the national accounts currently considers to be part of a country's production. If we think of the usual definition of economics and economic activity as the production, distribution, and consumption of goods and services, the national accounts production boundary does not include every type of economic activity, but rather includes some and leaves others out. Specifically, national accounts include flows that arise from

---

<sup>1</sup> [National Transfer Accounts: Understanding the Generational Economy](#).

the production and consumption of goods and services that are traded in a market for money, usually referred to as “market goods and services.”

They also include some flows that are not traded in markets for money: the value of owner-occupied housing and the value of some types of financial transactions and services are imputed in national accounts (US Bureau of Economic Analysis 2008), as are the production and consumption of goods produced by households for their own use. This is mostly the value of food grown by a household for its own consumption. In some countries with a large subsistence agriculture sector, this last part can be a substantial imputation. Policies for measuring own-use production are changing, and national statistical agencies vary widely in their ability to measure this production and consumption. Conceptually, however, the national accounting boundary is supposed to include the value of the production and consumption of these home-produced goods. What is not included in the production boundary of the national accounts, however, is the value of home-produced services.

This part of economic life goes by many names in the literature examining it: unpaid care work, household production, unpaid household services, or other formulations. I will use the term “unpaid care work” here. Time spent on unpaid care work (UCW) includes productive activities that are not already accounted for in national accounts. UCW includes time spent on direct care activities, such as caring for children, the elderly, the sick, or the disabled, and caring for the community through volunteer activities, as well as indirect care activities related to household management and maintenance. Cooking, cleaning, and household management and maintenance are some of the activities that are included as indirect care activities.

The System of National Accounts (SNA) is a United Nations (UN)-led initiative to codify national accounting, and most countries around the world organize their national accounting concepts and practices following the latest set of SNA guidelines (UN DESA 2009). The SNA addresses the invisibility of UCW by defining it as part of a “general production boundary” that encompasses the traditional production boundary but also includes UCW. The SNA defines UCW as the unpaid own-use “provision of services provided to household or family members, including

- household accounting and management, purchasing and/or transporting goods;
- preparing and/or serving meals, household waste disposal, and recycling;
- cleaning, decorating, and maintaining one’s own dwelling or premises, durables and other goods, and gardening;
- childcare and instruction, transporting and caring for elderly, dependent or other household members and domestic animals or pets, etc.” (ILO 2018).

To give a specific example, if a household grows potatoes for their own consumption, all the effort to grow the potato would be included in the production boundary: the planting of the seed or small plant, the time to water and weed the plot, and harvesting the potato. However, once the potato passes through the household door, the traditional production boundary ceases. Instead, the work to clean, cook, and serve the potato, as well as clean up after the meal is eaten, would be added to reach the “general” production boundary. While many researchers and advocates have noted for years that UCW is a valuable economic activity, with this expanded notion of the production boundary, we have finally reached the point where statistical agencies and international

measurement and monitoring bodies such as the International Labour Organization (ILO) and the UN explicitly include it in their work plans, goals, and reports.<sup>2</sup>

We are still years away from having consistent, comparable data across countries for the UCW, as we have for measures like gross domestic product (GDP) and marked labor force participation, but the day will surely come. We follow here a methodology called National Time Transfer Accounts, abbreviated NTTA (Donehower 2019), which combines a long-standing methodology for incorporating household production satellite accounting into the national accounts with the NTA's focus on age and imputed transfers.

The development of NTTA is conceptually linked to gender, as women specialize in UCW production, which is outside of national income. Simply disaggregating NTA profiles by gender without adding NTTA data on time use would give a misleading picture of productive activity and contributions to the household (Waring 1999).

## **1.2. Older People and Unpaid Care Work**

Discussions about older people and care are usually about older people needing care and care being provided by younger people. This posits older people not as workers but as consumers. When we integrate unpaid care work and market production into our understanding of economic life, we see many things differently, especially the working lives of older people. Older workers typically spend less time in the labor market than younger workers, for many reasons. There may be mandatory retirement policies, or incentives for retirement may be built into pension schemes. An older worker has had many years to save resources and may want to spend time on activities that do not make money, and they have the resources to make that choice. An older worker may have health issues that prevent them from working as much, or at all, in the market labor force as they did in their younger years.

Although health concerns may play a role in discouraging older people from engaging in unpaid care work, this sector is certainly not affected by mandatory retirement rules or the expectation of a “natural” time to cease working. Broadening our definition of work to include unpaid care work gives us a chance to reevaluate attitudes toward older people so that we can see them as

---

<sup>2</sup> The nomenclature around unpaid care work can be unclear. Time inputs not accounted for in national income should not be confused with unpaid family work on household-owned farms or other enterprises, which is referred to here as “unpaid family work.” This contrasts with “unpaid care work,” which is the unpaid care and housework that is not included in national income. Unpaid family work does not generate earnings for the unpaid family worker, but it does produce goods and services that are traded in the market and thus provide income to the household that is already part of national income, or it produces goods consumed by the household that are not traded in a marketplace but are imputed as part of national income. Unpaid care work time inputs are those for which the value of the time is never paid to anyone and is not included in national accounts measures such as gross domestic product or gross national income. While the term “household production” has become common in the literature to refer to productive activities that do not result in market goods or services, it should be noted that some of the activities included are performed outside the household for non-household members. Examples include caring for persons outside the household and volunteer activities.



producers and not just consumers. How much unpaid care work older people do is an empirical question that can be explored through NTTA estimates and related analyses.

Once we have the data to see older people as producers, we can also ask who consumes the care provided by older workers. Much of this depends on the prevailing household structure. If we think that current measurement tools are doing a reasonable job at measuring care exchanges, which is debatable, then care exchange is much more likely to happen between people who share a household than between people in separate households. Thus, multigenerational households are more likely to be a locus of care exchanges between young and old than separate, more nucleated households.

Given current trends in population aging and low birth rates, many countries face a future of a shrinking labor force or at least one with slower growth. Extending the working lives of older people is sometimes discussed as a possible policy response to this development, as trends toward longer life expectancy and healthier aging may make it possible for older people to participate in the market labor force until a much older age than they have in the past. However, looking at the unpaid care work of older people allows us to consider what might be lost if older people spend more time in the labor market. What if they spend less time on unpaid care work? Will their elderly spouses lack the care they need? Will their adult children have to reduce their own market labor supply to care for their young children if a grandparent is no longer home during the day or night to provide care and supervision? Policy moves that seek to extend market working lives may still make sense given the strong trend for older people to be healthier, but these policies are likely to be more successful if they include an unpaid care component that makes it easier for families to find paid care workers to replace care that may have been provided in the past by a grandparent or spouse.

## **2. Data and Methods**

### **2.1. Method Overview for the NTTA**

To generate NTTA estimates, we follow the long-standing research tradition of satellite accounting for household production (Pan American Health Organization 2010; Abraham and Mackie 2005), which provides an overall national estimate of unpaid care work. We then link this to the NTA framework, which disaggregates national flows by age and imputes consumption and transfers.

Time-use surveys are the main ingredient in producing NTTA estimates. Wage data are also useful, so that an imputed wage for unpaid care work can be used to value time in monetary units, but the analyses here will be exclusively time-valued. The basic estimation strategy is as follows:

- i. Identify available time-use surveys, either a complete time diary survey or another type of survey that contains a comprehensive set of questions to observe all types of UCW.
- ii. Identify time spent on UCW activities by age and gender in the time-use survey.
- iii. Use assumptions and time-use survey data on household composition to impute the age of consumers of UCW time produced in the household.
- iv. Use existing NTA methodology to impute UCW time transfers for men and women.

These steps are discussed in more detail below.

### ***Identify available time-use surveys***

Ideally, NTTAs are calculated using a time-use survey with the following characteristics:

- nationally representative;
- age and gender of each household member are listed;<sup>3</sup>
- able to represent an annual amount of time spent (i.e., time-use information includes the impact of weekends, holidays, or other special times with appropriate weighting so that these observations can be correctly weighted relative to an annual time span);
- complete time-use data for at least one person in each household; and
- hours in a day add up to 24 or close to it, or omitted hours are understood to be nonproductive.<sup>4</sup>

### ***Identify time spent on productive activities not included in national income***

We want to include in these satellite accounts those activities that would be included in national income if they were performed for wages instead of by nonmarket labor. One way to determine whether an activity meets this standard is through the “third party criterion”: you can pay someone else to perform the activity and still receive the benefit from it (Reid 1934). Activities such as sleeping, eating, sports, and leisure activities would not be included because paying someone else to perform these activities does not actually benefit you. Any activities related to home management or caregiving would qualify by this criterion.<sup>5</sup> The activities we are interested in recording are not included in national income but could be included if they were contractual rather than unpaid.

There are many different ways to classify activities, but in general we try to follow the most common standardized classification scheme which is the International Classification of Activities for Time Use Statistics (ICATUS) maintained by the UN (UN DESA 2021). Major activity groups

---

<sup>3</sup> Some time-use surveys have a complete time diary for only one person in the household; others survey all representative adults or all persons of a certain age or older. If a survey only has information on the age and sex of the time respondent in the household, a household production age profile can be produced based on the methodology described here, but not imputed consumption or transfers.

<sup>4</sup> If the total number of hours is very close to 24, an overall multiplicative adjustment can be made so that the total number of hours equals 24. If respondents show a range of 23–25 hours, for example, that margin of error is relatively small, so the adjustments will not be large. For a person whose answers total 23 hours, for example, all of their time allocations could be multiplied by  $24/23 = 1.0435$  to make a total of 24 hours.

<sup>5</sup> Some household management activities may be productive, but they do not meet the third-party criterion because they must be done in person. For example, the management of some financial and legal matters might seem like they could be outsourced to a personal assistant, but activities such as applying for bank loans or consulting with lawyers must largely be done in person. Even when interacting with government agencies, entities will also be mixed up between tasks that could be “outsourced” and those that must be done in person. You can have someone else drop off forms or submit tax payments to government entities for you, but for things like applying for a driver’s license, you need to show up in person to verify your identity. We examined coding resources closely and made the best guess as to what can and cannot be outsourced.

are shown in Table 1, with the unpaid care work groups in bold and marked with an asterisk. These are activities that are not included in national income but would be if they were paid for in the market. Note that categories 1 through 3 represent contracted time already included in national accounts. Categories 0 and 7–9 are activities that generally cannot be performed by one person and benefit another, so they do not meet the third-party criterion.<sup>6</sup> There is a new ICATUS standard approved in 2016, but only a few of the countries using this new scheme for their time-use surveys have available data. None of the countries included in this study use the new 2016 classification.

**Table 1: Major Groups in the International Classification of Activities for Time-Use Statistics**

0. Personal care
1. Employment for establishments
2. Primary production activities not for establishments
3. Services for income and other production of goods not for establishments
<b>4. Household maintenance, management, and shopping for own household *</b>
<b>5. Care for children, the sick, the elderly, and the disabled for own household *</b>
<b>6. Community services and help to other households *</b>
7. Learning
8. Social, cultural, and recreational activities
9. Mass media use

Note: Categories of productive activities not in national income are bold and marked with \*.

Source: UN DESA (2004).

If a particular time-use survey does not follow the ICATUS classification in Table 1, we have tried to follow the activity groupings as closely as possible. The NTTA subtypes of care activities are listed in Table 2. Groups 10, 11, and 12 in Table 2 are direct care for individuals. All other groups are included under the indirect care subtype. Note that the direct care groups involving care of persons inside or outside the household can be separated into different subtypes if the survey data are sufficiently detailed. In addition, some activities may not be relevant in all countries, such as fetching wood and carrying water, which will not appear as an activity in richer countries with more sophisticated infrastructure.

**Table 2: Grouping of Household Production Activities in NTTA**

<b>Time-Use Activity</b>
1. Cleaning
2. Laundry (includes sewing and clothing repair)
3. Cooking (food and drink preparation)
4. Household maintenance and repair

<sup>6</sup> There are gray areas here, especially when it comes to personal care. In theory, you could pay someone to brush your teeth for you and still get the benefit of clean teeth, but in practice, this only happens for rare paid dental exams.

<b>Time-Use Activity</b>
5. Lawn and garden care
6. Household management (finances, scheduling, coordinating, related communication, etc.)
7. Pet care (not veterinary care)
8. Purchasing goods and services
9. Travel (related to activities 1–8, 10–12)
10. Childcare <ul style="list-style-type: none"> <li>• Care for household children</li> <li>• Care for non-household children</li> </ul>
11. Care for adults and elders (these can be separated into two separate accounts if sufficient data are available) <ul style="list-style-type: none"> <li>• Care for household adults and elders</li> <li>• Care for non-household adults and elders</li> </ul>
12. Volunteering or other forms of care for community members (includes related travel)
13. Fetching wood or carrying water <sup>a</sup>

GDP = gross domestic product, NTA = National Transfer Accounts, NTTA = National Time Transfer Accounts.

<sup>a</sup> Including fetching wood and carrying water is conceptually problematic, since these activities when they are unpaid are now considered labor to produce goods for the household's own use, which is technically inside the market-based production boundary. In theory, this would make these market activities and their value already included in national accounts measures covered by NTA estimates. In practice, however, the estimation of these activities in measures such as GDP is so poor that it is not double counting to include them in the NTTA estimates.

Source: Donehower (2019).

Some activities in Table 1 represent human capital investments that we might be interested in, except that they are done for oneself, such as education or taking care of one's health. While we would be interested in these categories for an analysis of total human capital investment, we would not consider them in the NTTA accounts because they do not meet the third-party criterion and could not be traded in a market.

Also, when we think of some aspects of time spent caring for others, it is unclear whether these activities should be considered productive work or leisure. For example, is it free time for the adult in charge to take a child to the movies, or is it caring for the child? While this question is conceptually ambiguous, the time-use survey respondent or the classification scheme will in most cases make that decision. As a general principle, though, we would like to recognize this as childcare rather than leisure because you could pay someone else to take your child to the movies and the child would be supervised and thus receive care. Also, if you did not spend that time with your child, you would have to get someone else to provide that care, even if the care is just sitting next to the child.

A final note about gathering up the relevant activities pertains to "multitasking" and supervisory time that is not an active care activity. In some surveys, more than one activity can be reported for a unit of time. After an initial response of an activity performed in some period of time, some

surveys will ask whether the respondent was doing something else at the same time or ask about multiple tasks done at the same time. Other surveys ask whether the time spent on this activity was concurrent with responsibility for a minor child. Unfortunately, this diversity in time-use survey instruments in terms of how questions about secondary or overlapping activities are framed poses a major problem for cross-country comparisons. For this reason, NTTA estimates intended for cross-country comparisons use only primary activities and do not include any information on multitasking, overlapping activities, or secondary activities. A related issue is supervisory time, when one is not interacting with someone to provide care but is responsible for that person. Such responsibility can even be written into law by prohibiting leaving young children alone for too long or by making laws punishing neglect of the elderly. Consider the care of a young child or a severely impaired elderly person who is left alone overnight. If the primary caregiver could not be in the household, even if only while everyone is sleeping, other arrangements would have to be made, getting someone else to provide paid or unpaid care. In time-use surveys, such non-active but required supervisory time would likely not be coded as care, meaning that survey-driven estimates of care vastly underestimate the total amount of time that is circumscribed by care. Including such supervisory responsibilities in unpaid care work efforts is a crucial area for future research (Suh and Folbre 2016). Until we are able to include these responsibilities, our estimates should be understood as a lower bound for total care.

Estimates of time spent on paid work are also calculated from the time-use survey for comparative purposes. Included in these estimates is time that is not strictly paid market labor time, but time that must be spent to have the job. These additional work-related activities include job searching, work-related socializing, and commuting.

### ***Estimating age schedules***

#### ***Production***

Once activities are identified by age and sex, we calculate the preliminary NTTA age schedule for the production of each activity by taking the survey-weighted mean time spent on each activity group in the age/sex group. Zeros are included in the average for people who do not perform a particular activity.

Most time-use surveys do not interview younger children or have an adult report their time use, so there is a minimum age at which we can estimate the production of unpaid care work. In the absence of data, we assume that children who are too young to be interviewed do not engage in home production activities, or if they do, they are so unproductive that they are not worth including.

#### ***Consumption***

We do not directly observe how people consume the value of time in the NTTA production account. Instead, we use assumptions to allocate the value of time in production to consumers within the household.

For general activities within the household (cleaning, maintenance, etc.), the time produced is divided equally among all household members. This makes the most theoretical sense, since the consumption of these activities is mostly uniform across the household, or at least no data are available to distinguish consumption more precisely. For example, certain age groups may create

more mess in the household, requiring more household cleaning, but all household members consume the cleaned house equally, or if not equally, then data are not available to make a better assumption—how much time each household member spent in the household.

For age-targeted care activities in the household (childcare, adult care, or eldercare), however, a regression approach is used. This method is similar to the method used in market-based NTA estimates for education and health care, where we observe only a consumed amount at the household level and must impute the amount to specific individuals within the household (United Nations 2013). To apply this method to household amounts of care time produced, we estimate the following regression equation separately for childcare in the household and adult care in the household:

$$X_j = \sum_a \alpha(a) E_j(a) + \varepsilon_j$$

where  $E_j(a)$  is the number of members in each child or adult age group  $a$  who are “targets” for care and are not time-use respondents. Ages are grouped into 2- or 5-year groups to reduce noise. The positive  $\alpha(a)$  coefficients are assigned to the relevant age groups and used as weights to distribute the household amount of the type of care time produced. To add gender into this equation, we can double the number of coefficients by estimating  $\alpha(a, g)$  for each gender  $g$ .

The target age group is determined by how the survey was conducted. For example, if the survey defines “childcare” as care for those aged 0–18, then the regression equation will include membership in one- or two-year-wide age groups for ages 0–18. The regression equation is estimated based on the total amount and type of care produced by households and the number of individuals in each age group who are potential recipients of that care.

The producer of the care is not included in the regression estimate, even if he or she is in the target age group, because he or she is not a potential target of the care. The regression equation generates coefficients that are used as weights in allocating the household amount to individuals. The reason for using the regression for care is that infants and very elderly adults require more care than older children or younger elderly people. The regression approach is not able to capture all of these differences because it only works by detecting the variability between households with different age and sex compositions, not actual differences within households between individuals of similar age and sex. It is at least no worse than the assumption of equal allocation and, in fact, gives similar results in countries with low fertility and little intergenerational co-residence because there is less variability between households to exploit.

For time spent caring for individuals outside the household, we distribute the production as consumption across all individuals in the target population, using the age profile of household member care consumption as weights.

Once all production is allocated as consumption, producing the age- and gender-specific profiles is a matter of taking the age- and gender-specific average amounts using survey weights, in the same manner described for production.

### ***Net transfers***

Net transfers of unpaid care work are equal to consumption minus production since there is no way to store unpaid care work in an asset and consume it later. We assume that it is consumed at the moment it is produced. For direct unpaid care work for individuals, the total amount produced is an outflow and the total amount consumed is an inflow. For indirect care in the form of housework, some of that care is consumed by the producer and thus is not a transfer. For example, if a person spends 1 hour preparing dinner for a family of four (including himself), he produces 1 hour of cooking time, and each family member consumes 15 minutes. However, the person who did the cooking transfers only 45 minutes of that hour because 15 of the minutes were for his or her own consumption, which does not involve a transfer. At the national level, you could possibly have an aggregate net transfer if people are providing care for people in households outside the national boundaries, but this is so rare that we generally ignore it and assume aggregate net care transfers are zero.

### ***Finalizing age profiles***

The final aspects of creating NTTA age profiles are smoothing and adjusting to aggregate controls. We smooth the gender-specific age schedules of care production and care consumption with a cross-validation smoother called Friedman's Supersmoother (Friedman 1984) to reduce sampling noise and make the figures easier to view.

In the NTA, age profiles are adjusted so that the aggregate amount is consistent with aggregates as measured in the national accounts. The NTTA estimates for unpaid care work do not exist in the national accounts, so there is no external aggregate control for these age profiles. However, what we do have at the aggregate level for the consumption of care time is that it must equal the aggregate production of care time, and within each type of care. Paired profiles must sum to zero in the aggregate, aggregate consumption must equal production, and aggregate inflows must equal outflows. While that result must be obtained for the case of unsmoothed profiles, it can be altered depending on sampling weights and will also be altered by smoothing the profiles. Also, if only some of the potential care providers in the household are asked about their time use, there will be an accurate overall production profile, but the consumption profile must be adjusted upward to reflect the fact that the data are a subsample of care producers in the household.

To correct for these effects, a single adjustment factor is applied to both sexes. Because time-use surveys are designed to produce accurate estimates for production of time as opposed to the consumption, we treat production as the correct outflow amount and adjust consumption as inflow to match production. Mathematically, if  $P_{agg}$  is the aggregate unpaid care work produced for a particular activity and  $C_{agg}$  is the consumption (or inflow), the multiplicative adjustment factor for consumption,  $\theta$ , is calculated as follows:

$$\theta = \frac{P_{agg}}{C_{agg}}$$

## 2.2. Data

This study covers four countries in the Asia and Pacific region: Bangladesh, India, Mongolia, and Thailand. All countries use data from different years and use different classifications adapted to their own contexts and needs. The coding schemes and information on what activities qualify as UCW in each country can be found in the Data Appendix. The India survey is quite old, dating from 1998 to 1999, but the patterns are still instructive at least in understanding how the care economy in India was structured at that time.<sup>7</sup> It also has some relevance because, although the overall rates of male and female market labor force participation in India have changed somewhat since then, the gender gap is still very close to what it was at that time.

The countries included in this study differ in how detailed they can be when accounting for care. Usually, surveys distinguish between childcare and all other types of care. This limits the ability to analyze care for the elderly, but fortunately we still have the age of the caregiver and the household structure to give us clues about whether care is provided or used by an elderly person. One limitation of the study is that the time-use survey coding schemes vary by time and place. Another potential source of uncertainty is the interpretation by respondents of what is being asked and of activity coders in applying a particular scheme.

## 3. Results

### 3.1. Participation in Different Work Sectors

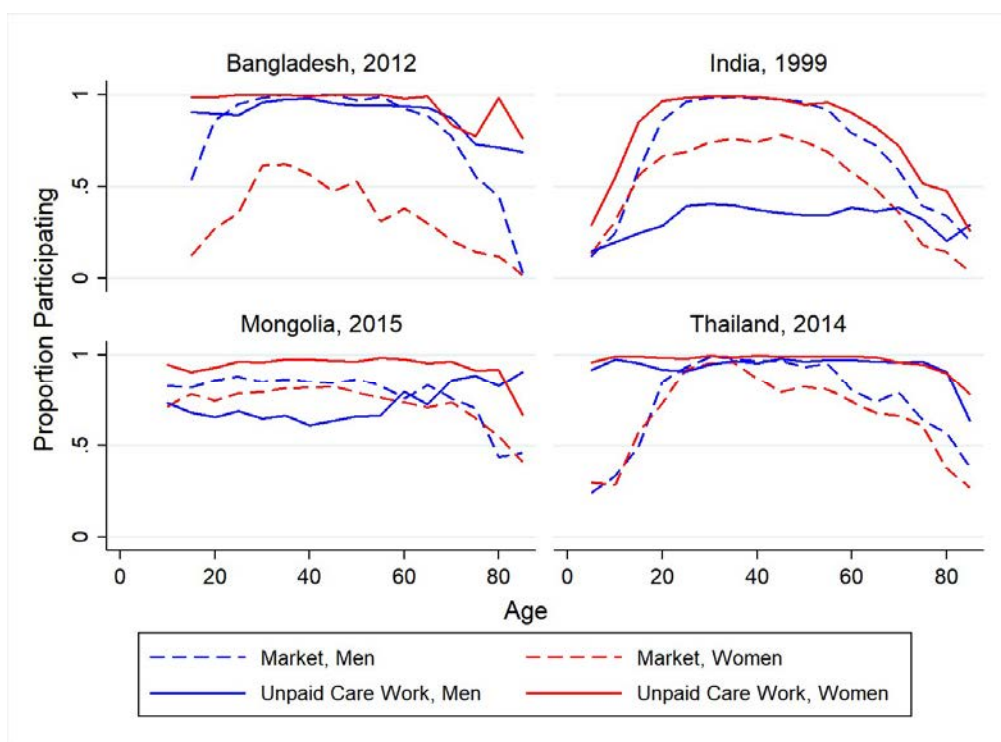
Figure 1 shows a very crude measure of participation in various work sectors. In this case, participation is based on time-use survey estimates of time spent in each sector, meaning that if the respondent reports any time at all in market labor or unpaid care work, he or she is counted as participating. The definition of market labor force participation includes time spent earning wages, but also includes time spent working in a household-owned enterprise or on a farm, even if the person did not receive a wage for that work. It also includes work-related activities such as job search, so it includes people who are not employed but are looking for a job. As mentioned earlier, unpaid care work includes both direct care of individuals and indirect care through housework and household maintenance and management.

---

<sup>7</sup> The 2019 time-use survey by the Ministry of Statistics and Programme Implementation was not available yet at the time the analysis was completed.



**Figure 1: Proportion of Participants in Market or Unpaid Care Work, by Age and Gender**

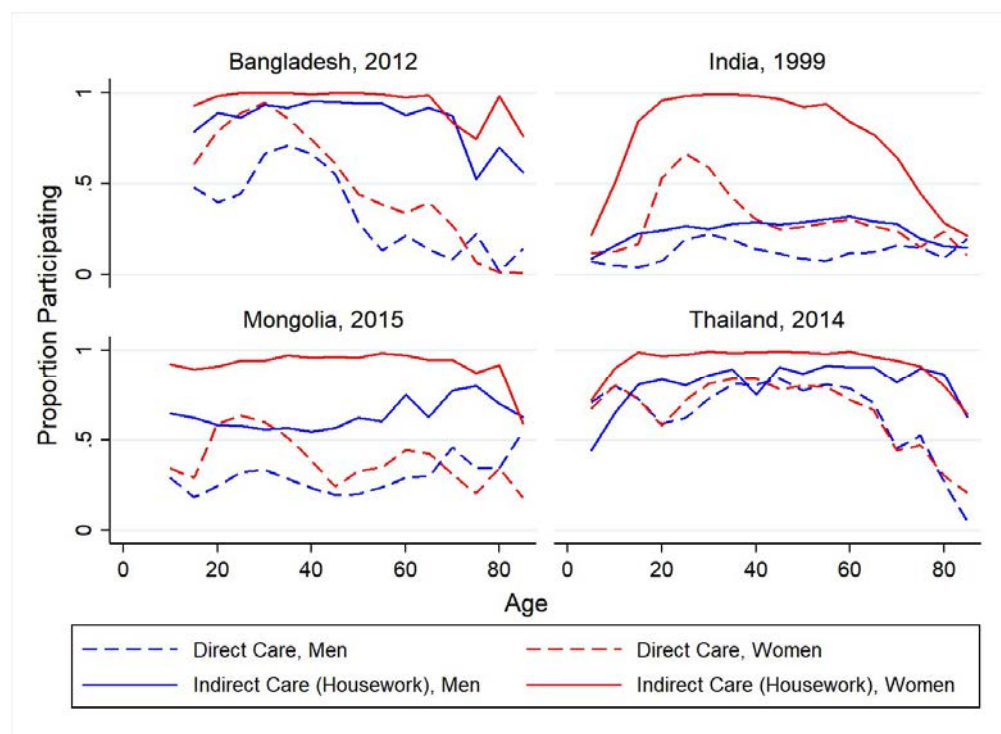


Source: Author's calculations.

Women's participation in unpaid care work, shown as solid red lines in Figure 1, is generally the highest category for any country at any age, reaching nearly 100% in many age groups. Certainly, this is a low threshold definition for participation, and it also raises concerns in the comparison across countries, as the estimates for India are different from other countries in terms of the age shape. However, with these caveats, we can say that older people, especially older women, are fully engaged in unpaid care work, even as paid care work declines.

To provide more detailed information on the types of unpaid care work performed by older people, Figure 2 shows the participation rates for the two main types of unpaid care work, divided into two main groups: direct and indirect. The types of unpaid care work in Figure 2 were as defined earlier. Indirect care work includes general housework such as cooking, cleaning, laundry, household maintenance and management, and errands such as shopping for goods or purchasing services for household use. Direct care includes caring for children or adults or caring for the community through volunteer work or caring for non-household members. Only primary activities are included.

**Figure 2: Proportion of Participants in Unpaid Care Work, Direct versus Indirect, by Age and Gender**



Source: Author's calculations.

Most of the time spent by women and men on unpaid care work is indirect care. In all countries except India, the level of indirect care participation is fairly consistent across all age groups. Direct care, however, is at its highest participation level in childbearing ages and reaches a second local maximum at older ages for women, indicating more care provision likely for grandchildren or an aging spouse.

The gender gaps in participation in this aspect of the gendered economy vary widely across the four countries. Of course, since the data for India are now more than 20 years old, we might expect the gender gaps to be relatively large compared to the other countries and may have converged substantially by now. However, the gender gap in overall market labor force participation has not changed since then: the overall female labor force participation rate (for women aged 15 and older) has decreased from 30% in 1999 to 21% in 2019. The same statistic for men has also decreased from 83% in 1999 to 74% in 2019, with a gender gap of 53% in both 1999 and 2019.<sup>8</sup> More recent data are available, but 2019 is referenced to avoid the impacts of the coronavirus disease (COVID-19) pandemic. If the overall gender gap has not changed, it is unlikely that the more specific way of measuring it here has changed substantially.

Of the other countries, Bangladesh has the largest gender gap in market work, while Mongolia has the largest gender gap in unpaid care work, largely due to gaps in indirect care. Overall,

<sup>8</sup> ILO. [ILOSTAT](#) (accessed 15 June 2021).

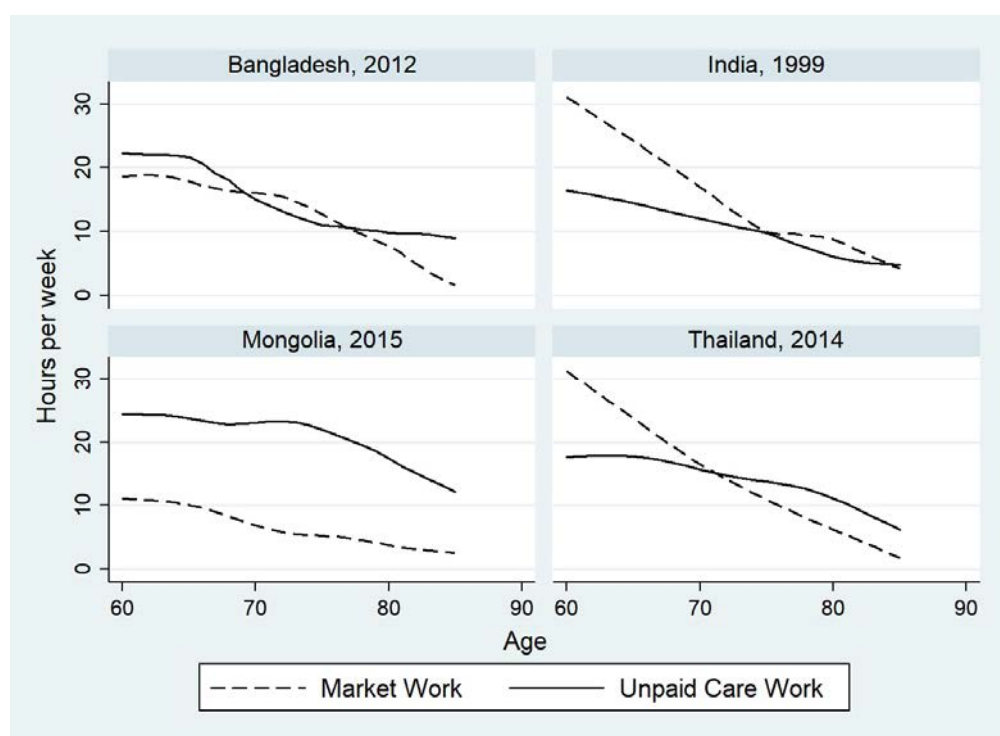
however, variability is the main feature of these gender gaps. A larger gap in one sector does not necessarily mean a larger gap in another or a smaller gap in another.

Apart from the samples coming from different years, some of the variation between the figures for different countries could be artifacts of different types of surveys in different countries or to different understanding of the survey instrument in different cultural settings. Therefore, a more reliable approach is to assess whether internal patterns of differences within a country—by age, gender, or type of work—vary across the sample of seven countries than to make much of the absolute differences in point estimates of a particular age and/or gender group between two countries.

### 3.2. Production

For the remainder of the data exploration, we will consider only the productive time of older people, defined here as 60 years and older. In most countries, this is roughly the age at which market labor force participation and hours worked by those doing market labor begins to decline steeply with age. Figure 3 shows the average hours per week spent in either market labor or unpaid care work. With the exception of Mongolia, the other three countries have very similar levels and trajectories in both areas, with the oldest age group ending with very low hours worked. In Mongolia, the trajectories are similar, but the level of unpaid care work is much higher than that of market work.

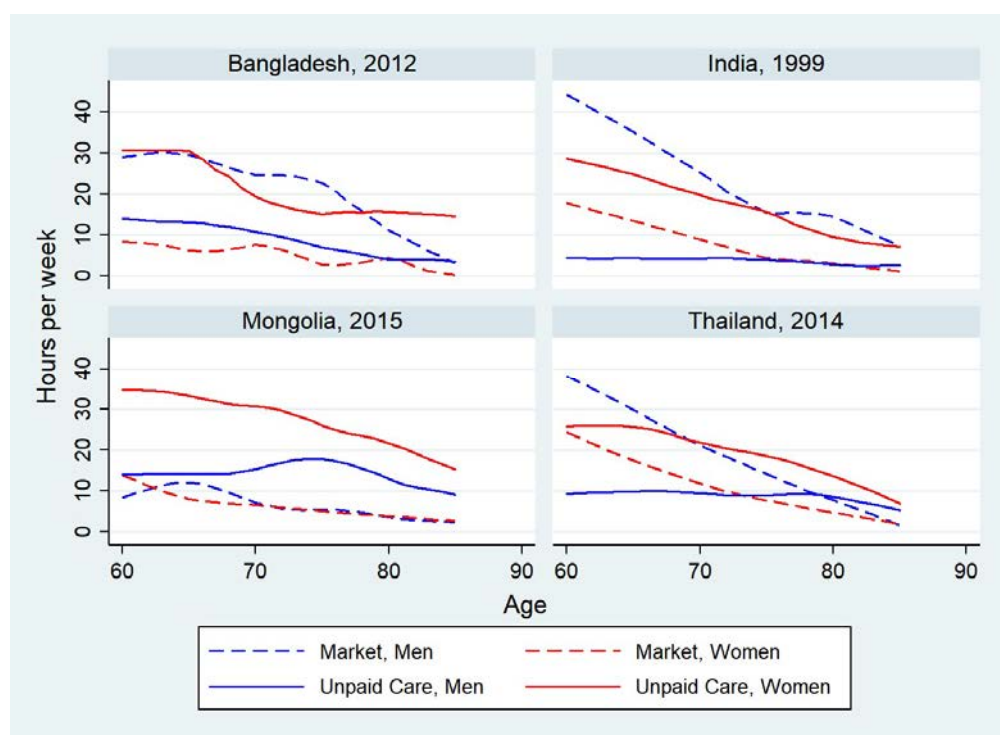
**Figure 3: Hours Worked by Sector, Both Sexes Combined, for Age 60+**



Source: Author's calculations.

These lines are separated by gender in Figure 4. Mongolia is also the special case here, as the other three countries have higher levels for men's market work and women's unpaid care work, but lower levels for women's market work and men's unpaid care work. Mongolia differs in part because of its history as a former socialist country. In many of the current or former socialist or communist countries, gender differences in market work effort are relatively small (although they may still show large gaps in monetary terms).

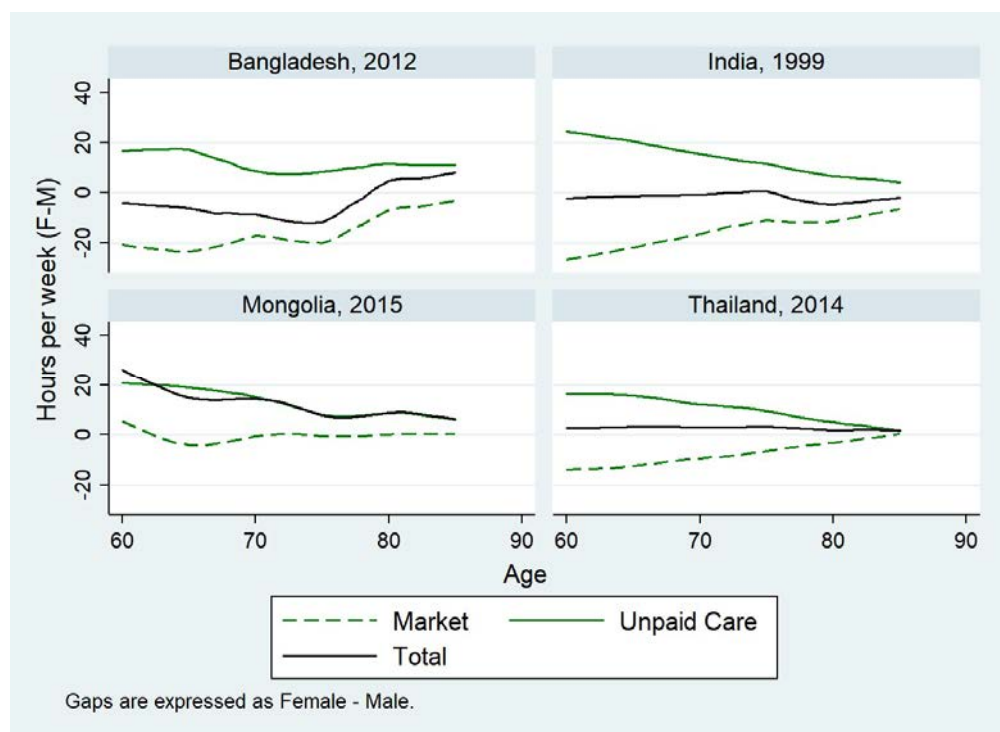
**Figure 4: Hours Worked by Sector and Sex, for Age 60+**



Source: Author's calculations.

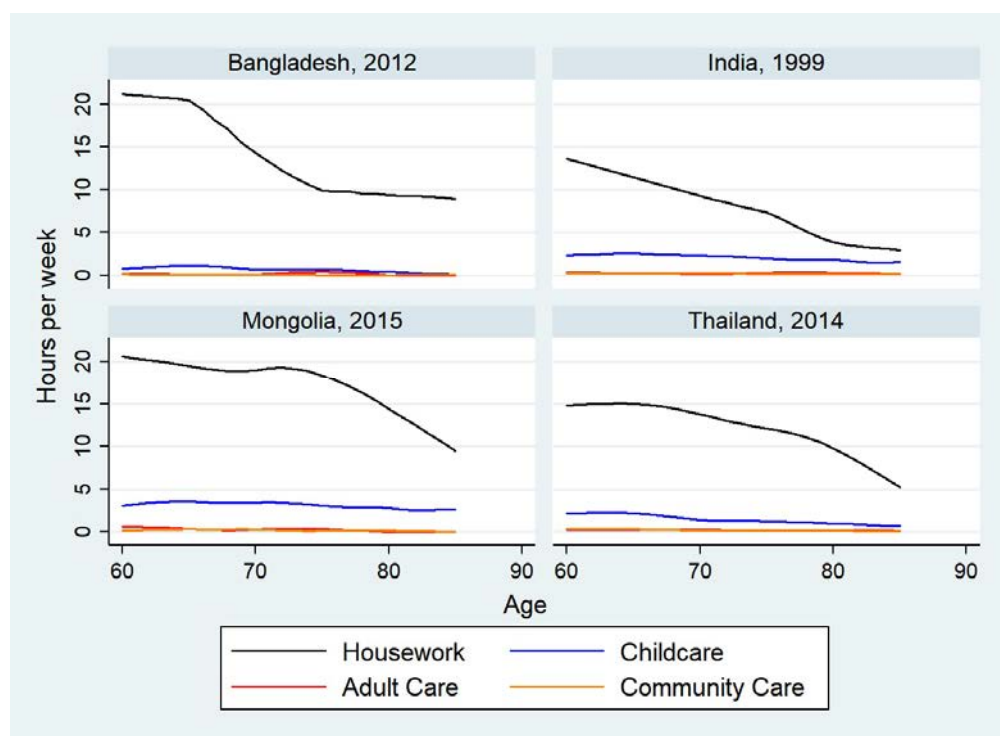
To focus on gender gaps, Figure 5 shows the same information as Figure 4, but subtracts men's levels from women's levels. Women consistently spend more time in total work than men in Mongolia and Thailand. The pattern in Mongolia is again similar to many former socialist or communist countries—very small gender gaps in market labor, but still a substantial disadvantage for women in the unpaid care work. In Thailand and India, gender gaps are largely symmetrical, with gaps in unpaid care work about equal to gaps in market work. In Bangladesh, total work hours tend to be higher for men than for women up to the oldest age groups.

**Figure 5: Sex Difference in Hours Worked, Female Minus Male, by Sector and for Total Work (Market and Unpaid Care Combined), Aged 60+**



Source: Author's calculations.

Finally, for the age profiles showing work production, Figure 6 shows how unpaid care work breaks down into subsectors. The largest sector in all four countries is housework, also referred to as indirect care work. The other three sectors make up direct care work. While the amounts are small, in all countries older people consistently contribute to childcare, generally for their own grandchildren. In Bangladesh, the proportion is very small.

**Figure 6: Unpaid Care Work Production by Subsector, Age 60+**

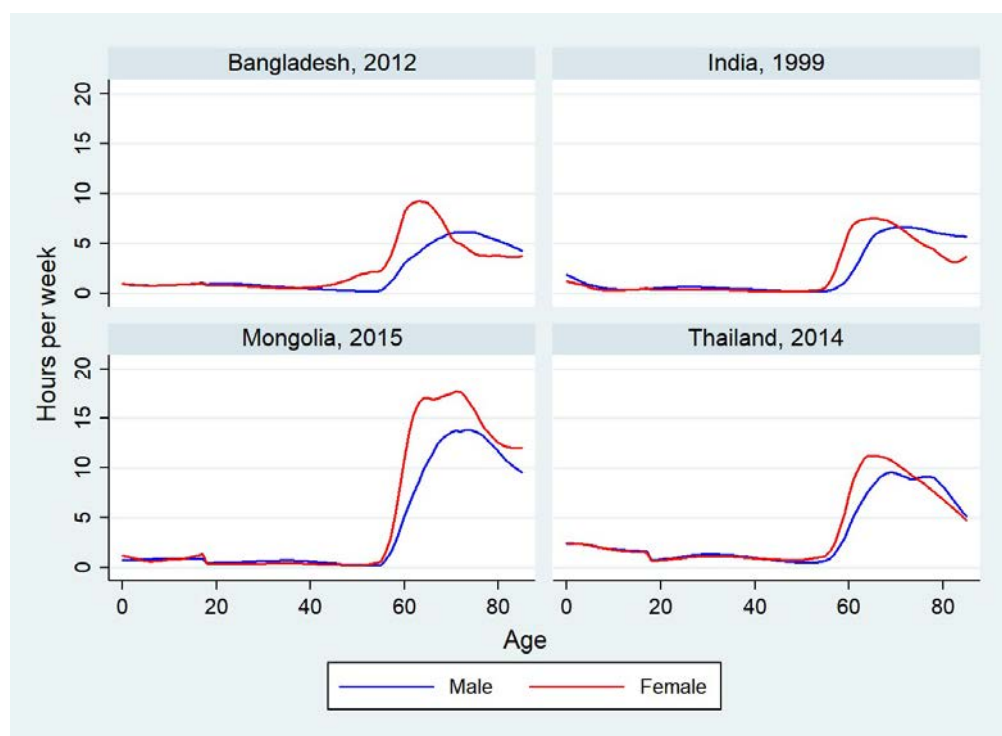
Source: Author's calculations.

### 3.3. Consumption and Transfers of Unpaid Care Work

Now that we understand the production side of unpaid care work—that women generally do more of it than men, while men do more market work; that most UCW is in the form of housework; that it is often greater in magnitude than market work, but not always—let us examine who benefits from this production of unpaid care work.

Figure 7 shows the overall profile of consumption by age and gender. In all four countries, most of the care work produced by the over 60-year-olds is also consumed by them. This makes sense given that most of the care provided is indirect care. Housework is shared by people in the household, and most of the other people in households with older people are themselves older people. Some of this care is consumed by the producer, almost all of it if the person lives alone (some may be transferred to persons outside the producer's household). In the older age groups, women consume more of the care produced by older people in the younger and older age groups (60s), but in the older and older age groups, men consume more. The exception is Mongolia, where women consume more in all age groups. These cross-country differences could be due to different household structures.

**Figure 7: Consumption of the Care Produced by Those Over 60 Years Old, by Gender**

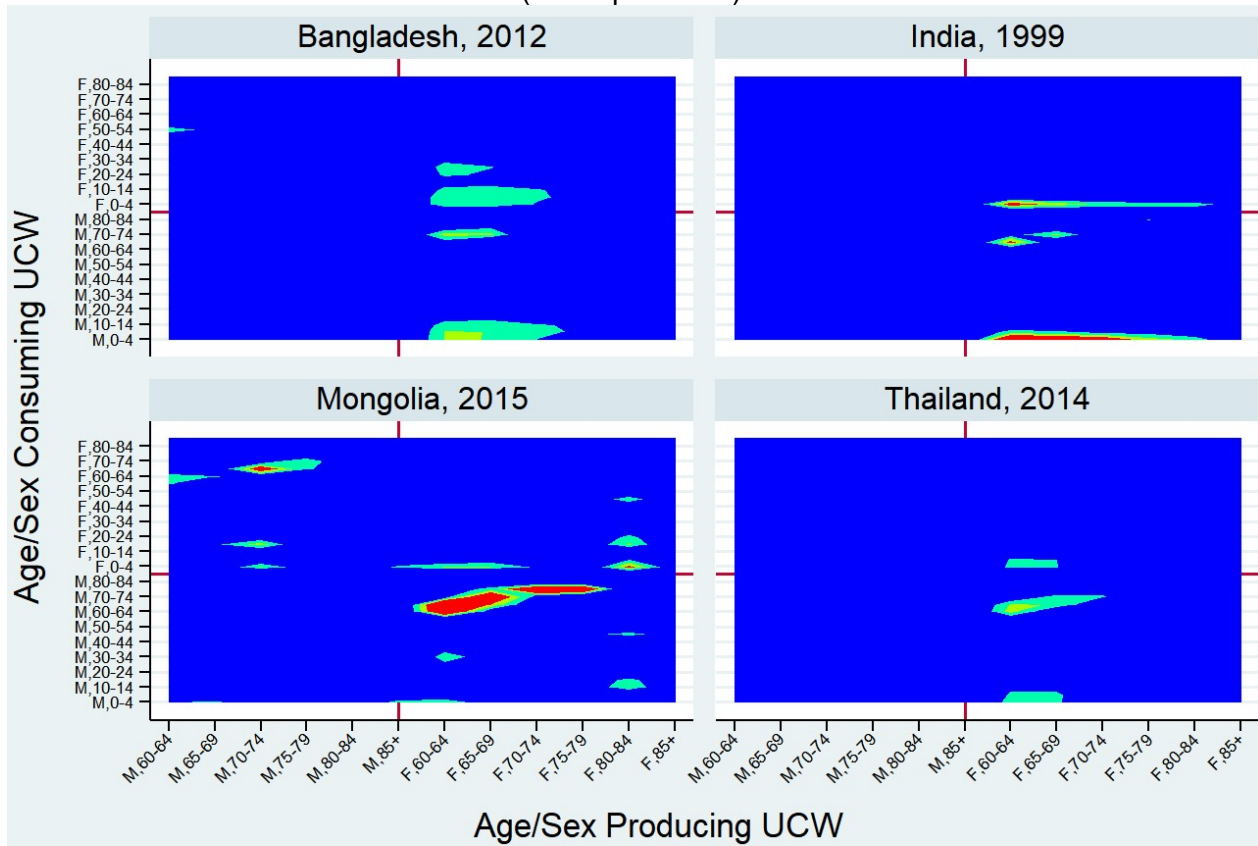


Source: Author's calculations.

Figure 7 shows that consistent amounts of the care provided by individuals over age 60 are being consumed by children, especially in Thailand, although the levels are quite a bit lower than the amounts spent by older individuals on their own care. To examine this more closely, we can look at the complete matrix of transfers by age and gender. This is shown in Figure 8.



**Figure 8: Average Unpaid Care Work Time Produced by an Age/Sex Group Over 60 Years Old, Consumed by a Particular Age/Sex Group**  
(hours per week)



F = female, M = male, UCW = unpaid care work.

Note: The averages are per time producer. Cells shown in red represent an average transfer of more than 2 hours per week. Yellow represents 1.5 to 2.0 hours, light green represents 1.0 to 1.5 hours, and blue represents less than one hour.

Source: Author's calculations.

So far, we have had to guess the linkage between care provider and recipient based on marginal age profiles, but we can examine this explicitly by plotting the complete matrix of care as shown in Figure 8. This figure shows a square array where rows and columns represent the age/gender groups in our population, and each cell in the array represents the care provided by individuals defined by the age and gender group in the column to individuals defined by the age and gender group in the row.

The four contour plots in Figure 8 each represent the complete UCW transfer matrix for each of the four countries. These are transfers, so UCW produced by the consumer is not included. For Mongolia and India, a sample of each country's household structure was included in the time-use survey—for these countries, the full household list by age and sex was available for each household that had a time-use respondent. For Thailand and Bangladesh, only the age and sex of the time-use respondents were included, but a variety of additional household data were available. Specifically, household structure information from census samples was imputed to time-



use respondents based on the respondent's age, sex, and marital status, and the presence in the census households of elders or children who could be recipients of direct care. Using these additional data, time production for each respondent was mapped to individuals from the census samples so that their full household structure was known.

Each country figure is a matrix where each cell represents the average amount of time produced by a person of a given age over 60 and sex and consumed by a person of any age and sex. Note that the average is per UCW producer. Cells shown in red represent an average transfer of more than 2 hours per week. Yellow represents 1.5–2.0 hours, light green represents 1.0–1.5 hours, and blue represents for less than 1 hour. These are not enormous amounts of time, but for an intergenerational transfer of care time, this represents, on average, a significant portion of total care.

On the horizontal axis are the age and sex of the producers, in age groups by 5 years of age, with males listed first followed by females, and only groups of ages 60 and older are included. On the vertical axis are the age/sex bins of consumers. Thus, each country figure has four quadrants. The lower left panel represents male-to-male transfers, the upper right panel represents female-to-female transfers, the lower right panel represents female-to-male transfers, and the upper left panel represents male-to-female transfers.

Looking at the figures for these four countries, we see that Thailand has the lowest volume of transfers of any of the countries, the largest area covered in dark blue. Certainly, some of these differences are due to different time-use survey instruments, but it is at least an indication that the UCW economy in Thailand differs from that of other countries. In Thailand, India, and Bangladesh, almost the entire left half of the chart is blue, i.e., the lowest level of transfers, suggesting that older men make very few UCW transfers compared to women. The exception is Mongolia, where men aged 60–79 make some transfers to women of roughly the same age, likely their wives. Men in their late 60s and early 70s also transfer small amounts to young children, and to young girls rather than young boys, likely their grandchildren.

Looking at the right side of the four contour plots, there are significant areas of larger transfers by women. In Mongolia and Thailand, women are making transfers to young children (yellow and green at the very bottom for young girls and in the middle for young boys). In India in particular, transfers to boys are larger than to girls. This may reflect preferential treatment of grandsons by grandmothers over granddaughters. It is also likely due to the uneven sex ratios of young children, with more boys than girls, through sex selection (which is illegal and punishable under the law)<sup>9</sup> or sex-based stopping behaviors. There is more care transfer to young boys because there are more young boys. There are also areas of care transfers from older women to older men of the same age, likely husbands.

Mongolia appears to have the most diversified UCW system, with men making more transfers of care to children and wives and more transfers coming from oldest age groups, suggesting that elderly Mongolian men may play a greater role in caring for their elderly wives than men in many

---

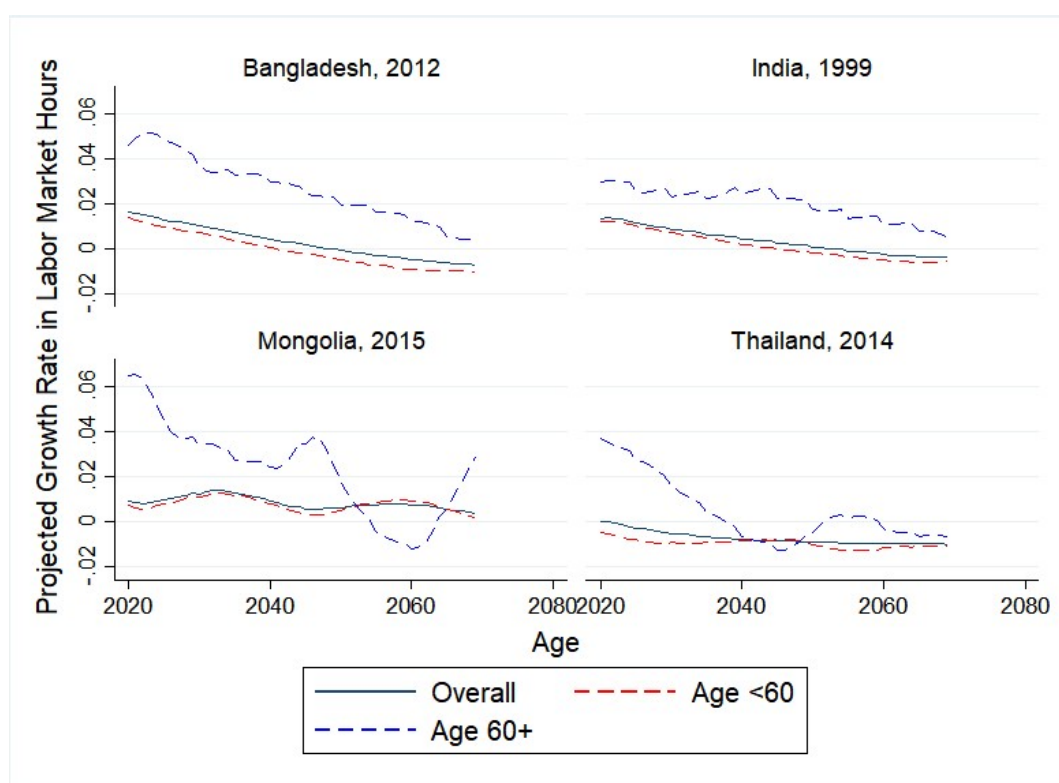
<sup>9</sup> As per the Preconception and Prenatal Diagnostics Techniques Act of 1994, even prenatal diagnostic techniques for sex determination of the fetus is punishable.

other countries. The nature of a country's UCW transfer system may have implications for how well the system can respond to changes in the age, sex, and household composition of a society.

### 3.4. Rising Senior Labor Market Effort

What changes might the transfer system have to adjust to? All four countries in this study are projected to have lower labor force growth rates over time, as shown in Figure 9. This figure is a projected measure of labor force growth created by taking an age profile of hours spent in market work by age and weighted by UN population projections. This assumes that hours worked today will remain constant by age and sex. It is a projection of total hours of market labor force effort, which would be the same thing as projecting the effective labor force if age and sex patterns of per capita productivity (or wages, which are an indicator of productivity but not the same thing) remain constant. To separate trends for older and younger persons, growth rates in projected hours worked are shown for the total population, the population under age 60, and those over age 60.

**Figure 9: Annual Growth Rate of Projected Aggregate Hours of Market Labor Effort by Country and Age Group**



Note: Growth rate of age profiles of hours of market work, weighted by UN population projections, medium variant.

Source: Author's calculations.

While not monotonic, the trend in the growth rate for the overall population in hours in all of the countries is declining, barely in Mongolia and more consistently so in the other countries. Bangladesh and India never reach the point of negative growth rates, but Thailand and Mongolia

do. (The recovery in growth rates is related to the long-term UN population projection, which assumes that fertility rates will return to replacement levels over time if they are currently below replacement levels.)

What if these countries think to enhance their labor supply over time by increasing the labor market effort of older people? We have seen evidence here that older people are already doing market work and unpaid care work, so what would happen to their total work hours if they increased market work? It would certainly increase, which many older people may not want to or cannot do. This could work against any policy changes aimed at increasing the workload of those over 60 years of age.

The estimates presented in this paper give us a way to enhance these types of market labor force policies by incorporating unpaid care work into the planning process. If we want older workers to increase their market labor force effort without increasing their total hours worked, then some of their unpaid care work responsibilities must be shifted to paid care workers. NTTA estimates give us a way to estimate how many workers would be needed in such a program. Table 3 shows a rudimentary example of this type of calculation. The first column shows the estimated millions of hours of paid work currently performed by persons over 60 years of age. The next column contains 5% of that number; this is the target of a hypothetical policy to increase older workers' hours worked by 5%. The next group of columns indicates this 5% increase relative to the total number of unpaid care work hours that older people are producing by different types. As discussed earlier, the adult care and volunteer categories are so small that replacing these hours with the inputs of paid care workers will not be enough to keep total hours worked the same. And because women do much more unpaid care work than men, a larger share of their unpaid care work must be replaced to make the 5% trade-off. The good news is in the last two columns. This calculation divides the hours of unpaid care work to replace with paid care work by a rough estimate of a full-time worker for 1 year (40 hours/week x 50 workweeks/year). The last column shows the number of full-time workers relative to the total population. Bangladesh will need to hire the equivalent of 0.2% of its population as paid care workers to replace the foregone unpaid care work that older workers will no longer perform if they increase their market work by 5% but hold their total work constant.

**Table 3: Replacing Unpaid Care Work of Older People with Paid Care Workers to Keep Total Work Constant If Older People Increase Paid Work Hours by 5%**

	Millions of Paid Work Hours, 2020	Additional 5% Millions of Paid Work Hours	Add'l 5% Paid Work Hours as % of UCW Types:					FT Paid Care Workers	
								#	% of
			<u>NTTA</u>	<u>Child-care</u>	<u>Adult care</u>	<u>Volunteer</u>	<u>House-work</u>	<u>(Millions)</u>	<u>Total Pop</u>
Bangladesh									
Male	8,382	419	12%	528%	781%	3040%	12%		
Female	2,030	101	<u>1%</u>	<u>24%</u>	<u>388%</u>	<u>552%</u>	<u>1%</u>		
Total	10,412	521	5%	103%	652%	1618%	5%	0.260	0.2%
India									
Male	111,696	5,585	41%	158%	1043%	830%	62%		
Female	39,728	1,986	<u>3%</u>	<u>16%</u>	<u>174%</u>	<u>286%</u>	<u>3%</u>		
Total	151,424	7,571	8%	46%	452%	553%	10%	3.786	0.3%
Mongolia									
Male	53	3	4%	17%	131%	128%	5%		
Female	56	3	<u>1%</u>	<u>11%</u>	<u>143%</u>	<u>209%</u>	<u>1%</u>		
Total	109	5	2%	13%	137%	160%	2%	0.003	0.1%
Thailand									
Male	7,441	372	13%	122%	626%	484%	16%		
Female	5,257	263	<u>3%</u>	<u>30%</u>	<u>259%</u>	<u>291%</u>	<u>4%</u>		
Total	12,698	635	6%	54%	394%	380%	7%	0.317	0.5%

FT = full time, UCW = unpaid care work.

Source: Author's calculations.

The same calculation for the other countries yields similarly low figures: 0.3% for India, 0.1% for Mongolia, and 0.5% for Thailand. All figures are well below 1%. This scale of intervention seems like a manageable investment to make to ensure that increased market work for the elderly does not create too much of a work burden on the older people or leave the recipients of this unpaid care work with unmet needs. The unmet need could be considered as being for the care recipient or for others who are responsible for arranging care for others, such as a parent whose child previously received unpaid care from a grandparent.

Of course, in this thought experiment, the total hours worked in market labor and UCW remain the same; we have only reallocated some of the UCW from the elderly to paid care work for others. It does increase the total number of hours of market labor and potentially allows for greater efficiency across the system if elders are more productive at market labor force jobs and would prefer to stay in them, while taking advantage of paid care providers. A crucial part of the policy message, however, is that any investment in care economy jobs in the paid care sector should create good quality, well-paid jobs that provide high quality care. This maximizes the benefits to care providers, those who contract care, those who receive care, and the society as a whole.

#### **4. Discussion**

The estimates in this paper demonstrate the important role unpaid care work plays in our economies, and specifically the unpaid care work of older people, especially women. Unpaid care work has its own patterns by age and sex compared to the more commonly understood definition of “work” that includes only work in the market labor force. Understanding total work, market and unpaid care work, gives policy makers tools to intervene in the market labor force in a way that protects workers’ well-being and potentially makes policy more effective.

While the analysis presented here is descriptive and relatively unsophisticated without equilibrating models with many feedback effects, it is easily accessible to those who need to be familiar with issues around unpaid care work. The best way to move this work forward is to make more and higher quality time-use data available and to focus on cross-national, comparative survey instruments. This will allow for better estimates of care flows across our economies and better policy advice based on these data.

## DATA APPENDIX

### Bangladesh

The Bangladesh time-use survey data are from the 2012 Bangladesh Pilot Time Use Survey, conducted by the Bangladesh Bureau of Statistics.

Details on the survey are available here:

Bangladesh Bureau of Statistics. 2013. Time Use Pilot Survey 2012. Dhaka. [http://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/96220c5a\\_5763\\_4628\\_94\\_94\\_950862accd8c/TUSReport2012.pdf](http://bbs.portal.gov.bd/sites/default/files/files/bbs.portal.gov.bd/page/96220c5a_5763_4628_94_94_950862accd8c/TUSReport2012.pdf).

This survey is a 24-hour diary survey, coded using the 2003 version of the International Classification of Activities for Time Use Statistics. The full coding scheme can be found in Annex 21 of the Guide to Producing Statistics on Time Use: Measuring Paid and Unpaid Work (UN DESA 2004), which can be accessed here: [https://unstats.un.org/unsd/publication/seriesf/seriesf\\_93e.pdf](https://unstats.un.org/unsd/publication/seriesf/seriesf_93e.pdf).

Codes (from survey dataset variable “act5”) included in activity groups:

- Market work: 1111–5900
- Indirect care (general housework): 6111–6900
- Direct care for household children: 7111, 7112, 7113, 7114
- Direct care for household adults: 7121, 7122, 7123
- Direct care for household others (includes age not specified): 7200, 7900
- Direct care, volunteering: 8000–8999, except 8116 and 8117
- Direct care for non-household children: 8116
- Direct care for non-household adults: 8117

### India

The time-use survey data are from India's Pilot Time Use Survey conducted by the Ministry of Statistics and Programme Implementation in 1998–1999. They include data from six states (Haryana, Madhya Pradesh, Gujarat, Odisha,<sup>10</sup> Tamil Nadu, and Meghalaya).<sup>11</sup>

Details on the survey are available here:

Government of India, Ministry of Statistics and Programme Implementation, Central Statistical Organisation. n.d. *Report of the Time Use Survey*. [http://164.100.161.63/sites/default/files/publication\\_reports/Report%20of%20the%20Time%20Use%20Survey-Final.pdf](http://164.100.161.63/sites/default/files/publication_reports/Report%20of%20the%20Time%20Use%20Survey-Final.pdf).

This survey is a 24-hour diary survey, coded using a scheme developed for the survey.

---

<sup>10</sup> In 2011, the Government of India approved the name change of the State of Orissa to Odisha. This document reflects this change. However, when reference is made to policies that predate the name change, the formal name Orissa is retained.

<sup>11</sup> There is a 2019 time-use survey also by the Ministry of Statistics and Programme Implementation but the dataset was not available at the time the analysis was completed.

Codes (from survey documentation) included in activity groups:

- Market work: 111–329, 892
- Indirect care (general housework): 411, 421, 431, 441, 461, 471, 481, 491
- Direct care for household children: 511, 521, 531, 561, 571
- Direct care for household adults: 541, 551, 562, 572
- Direct care for household others (includes age not specified): 591
- Direct care, volunteering: 611–691
- Direct care for non-household children: not available
- Direct care for non-household adults: not available
- Direct care for non-household members: 581

Because separate codes for non-household children and adults were not available, they were grouped into a single set of activities, and their consumption was distributed proportionally to the age profiles of adults and children in the household.

## **Mongolia**

Time-use survey data are from the 2015 Mongolian Time Use Survey of 2015 conducted by the National Statistical Office (NSO) of Mongolia.

The data are freely available online. Data and details on the survey can be found in:

National Statistical Office. Mongolian – TUS 2015.

<http://web.nso.mn/nada/index.php/catalog/108>.

This survey is a 24-hour diary survey, coded using an early version of the International Classification of Activities for Time Use Statistics (ICATUS). While the ICATUS has been updated since Mongolia began conducting time-use surveys, they have continued to use this version. A report on a previous survey with the coding used in this survey and the 2015 version can be accessed here:

Mongolian National Statistics Office and UNDP. 2000. A Pilot Time Use Survey. Ulaanbaatar. <https://unstats.un.org/unsd/demographic/sconcerns/tuse/Country/Mongolia/sourcemng2000.pdf>.

Codes included (from variable “activity\_code”) in activity groups:

- Market work: 0–199
- Indirect care (general housework): 211–299
- Direct care for household children: 311–319
- Direct care for household adults: 321–339
- Direct care for household others (mainly travel related to care): 380, 390
- Direct care, volunteering: 411–499, except 416 and 417
- Direct care for non-household children: 416
- Direct care for non-household adults: 417

## Thailand

Time-use survey data in Thailand are from the 2014 Thailand Time Use Survey conducted by the National Statistical Office of Thailand.

This survey is a 24-hour diary survey coded using an adapted version of the 1997 International Classification of Activities for Time Use Statistics, which is very similar to the version used in Bangladesh. The full coding scheme can be found in Annex 21 of the Guide to Producing Statistics on Time Use: Measuring Paid and Unpaid Work (UN DESA 2004), which can be accessed here: [https://unstats.un.org/unsd/publication/seriesf/seriesf\\_93e.pdf](https://unstats.un.org/unsd/publication/seriesf/seriesf_93e.pdf).

Codes (from survey dataset variable "ICATUS\_A") included in activity groups:

- Market work: gen paidwk = 1111–5999
- Indirect care (general housework): hwk = 6000–6999
- Direct care for household children: 7111, 7112, 7113, 7114
- Direct care for household adults: 7121, 7122, 7123
- Direct care for household others (includes age not specified): 7200, 7900
- Direct care, volunteering: 8000–8999, except 8116 and 8117
- Direct care for non-household children: 8116
- Direct care for non-household adults: 8117



## REFERENCES

- Abraham, K. G. and C. Mackie. 2005. *Beyond the Market: Designing Nonmarket Accounts for the United States*. Washington, DC: National Academies Press.
- Donehower, G. 2019. Methodology of the National Time Transfer Accounts. In B. Piedad Urdinola and J. A. Tovar, eds. *Time Use and Transfers in the Americas: Producing, Consuming, and Sharing Time Across Generations and Genders*. pp. 5–40. Cham, Switzerland: Springer Nature Switzerland. <https://doi.org/10.1007/978-3-030-11806-8>.
- Friedman, J. H. 1984. A Variable Span Smoother. Technical Report (5). Laboratory for Computational Statistics, Department of Statistics, Stanford University.
- ILO. 2018. Forms of Work: An Overview of the New Statistical Standards. Section on Own-Use Production Work. International Labour Organization. <https://ilostat.ilo.org/resources/concepts-and-definitions/forms-of-work/> (accessed 15 June 2018).
- Kelly, R. M. 1991. *The Gendered Economy: Work, Careers, and Success*. Thousand Oaks, CA: Sage Publications, Inc.
- Lee, R. D. and A. Mason, eds. 2011. *Population Aging and the Generational Economy: A Global Perspective*. Cheltenham UK and Northampton MA: Edward Elgar.
- Pan American Health Organization. 2010. *The Invisible Economy and Gender Inequalities: The Importance of Measuring and Valuing Unpaid Work*. Washington, DC: World Health Organization.
- Reid, M. 1934. *Economics of Household Production*. New York, NY: Wiley.
- Suh, J. and N. Folbre. 2016. Valuing Unpaid Child Care in the US: A Prototype Satellite Account Using the American Time Use Survey. *Review of Income and Wealth*. 62 (4). pp. 668–684.
- United Nations. 2013. *National Transfer Accounts Manual: Measuring and Analyzing the Generational Economy*. New York, NY.
- UN DESA. 2004. Guide to Producing Statistics on Time Use Measuring Paid and Unpaid Work. Statistical Papers. Series F. No. 93. United Nations Department of Economic and Social Affairs, New York, NY.
- \_\_\_\_\_. 2009. *System of National Accounts 2008*. New York, NY: United Nations Department of Economic and Social Affairs. <https://unstats.un.org/unsd/nationalaccount/sna2008.asp>.
- \_\_\_\_\_. 2021. International Classification of Activities for Time-Use Statistics 2016. Statistical Papers. Series M. No. 98. United Nations Department of Economic and Social Affairs, New York, NY.

US Bureau of Economic Analysis. 2008. Frequently Asked Questions: Why Does GDP Include Imputations? [https://www.bea.gov/faq/?faq\\_id=488](https://www.bea.gov/faq/?faq_id=488).

Waring, M. 1999. *Counting for Nothing: What Men Value and What Women Are Worth*. University of Toronto Press.

## **Gender and the Total Work of Older Workers in Asia**

In Asia, aging countries with slow population growth worry about a lack of workers in the future and see older people's labor as a potential solution. However, this leaves out the work that many older people already do—unpaid care work. Drawing on data from Bangladesh, India, Mongolia, and Thailand, estimates in this paper show that older people, especially older women, are doing a great deal of work caring for others. Policymakers should take this unpaid care work into account when designing policy around older people's market labor.

### **About the Asian Development Bank**

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members—49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

