CARE CONUNDRUM IN SOUTH KOREA: IS THERE UNMET DEMAND FOR CHILDCARE AND ELDERCARE?

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THE CARE WORK AND THE ECONOMY (CWE-GAM) PROJECT

The Care Work and the Economy (CWE-GAM) Project strives to reduce gender gaps in economic outcomes and enhance gender equality by illuminating and properly valuing the broader economic and social contributions of caregivers and integrating care in macroeconomic policymaking toolkits. We work to provide policymakers, scholars, researchers and advocacy groups with gender-aware data, empirical evidence, and analytical tools needed to promote creative, gender-sensitive macroeconomic and social policy solutions. In this era of demographic shifts and economic change, innovative policy solutions to chronic public underinvestment in care provisioning and infrastructures and the constraints that care work places on women's life and employment choices are needed more than ever. Sustainable development requires gender-sensitive policy tools that integrate emerging understandings of care work and its connection with labor supply, and economic and welfare outcomes.

Find out more about the project at www.careworkeconomy.org.

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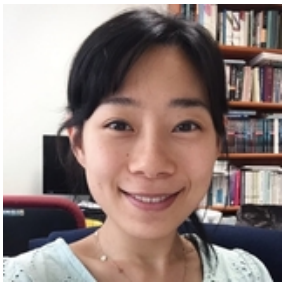

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1. INTRODUCTION

Korea currently faces a puzzling situation that is also emerging in other high and upper middle-income countries: continued provision of vast amount of family care for the frail elderly and young children, despite the ample supply of paid care workers. A possible explanation is that families, particularly the primary caregivers (i.e., daughters and mothers), prefer to take care of their aging parents and children. Another possible explanation is that families are 'care work-constrained' timewise, in that primary caregivers in these households would prefer to spend less time in caregiving and reallocate their time to other activities but are unable to do so. In other words, they face constraints in terms of getting other family members (e.g., their spouses) involved in providing care and/or obtaining quality paid care services as substitutes. To date, however, there is no study that empirically examines whether these families are constrained in meeting care needs.

Care work can be intense and demanding, but it can also be rewarding (Craig, 2006). Caring for young children and frail elderly is a natural and necessary stage of humankind, but when it is performed exclusively by socially ascribed group(s), it can be a burden. As provision of care has mainly been performed by women, they often face multiple challenges, struggling from chronic fatigue and stress to their constrained choice of employment (Kim, 2018; Choi et al., 2016; Kim & Lee, 2005; Lee, 2003). Given that a large portion of care work is still carried by families despite the recent growth of social care in Korea (Kang et al 2021), investigating how family primary caregivers perceive their care work and to what extent they perform care excessively can deepen our understanding of their current dilemma and hardship.

We use the 2018 survey data of nationally representative sample of 1001 Korean households with eldercare and childcare needs collected by Gallup Korea for the Care Work and the Economy Project to analyze the preferred amount of care in relation to the actual amount of care provided by family primary caregivers. Our findings, based on entropy regression results, show a non-trivial level of discrepancy and factors associated with such discrepancy and 'excess caregiving.' This paper is organized as follows. Sections II and III provide the background context and review of the literature respectively, followed by data and methodology description in Section IV. Section V presents the findings and discussions of the study. The paper concludes with policy implications in Section VI.

2. BACKGROUND OF THE STUDY: KOREAN CONTEXT

With the rapid increase in life expectancy and steady decline in fertility rate over the last few decades, the Korean Government has recognized the difficulties faced by families in meeting the growing demand for eldercare and childcare. Since early 2000, it has expanded public investment in care provisioning by implementing a universal childcare service policy, broadening the scope of LTCI (Long-term Care Insurance) coverage to include dementia patients and those without severe functional limitations, and strengthening the Community Care system (by local governments) through the adoption of the "Customized Elderly Community Care" system, and "Parent Care Communities" (See Appendices A and B).

Despite the expansion of government support and the rapid growth of private sector participation in the care market, several studies show that the care workload in households have not improved. Kim's (2019) analysis of the social survey data demonstrates that family caregivers of young children and frail elderly view caring as a burden, and they experience significant opportunity costs. Many primary caregivers are still women who perform a lion's share of the total care work even if they utilize paid care services (Kim, 2010; Choi, 2009).

Trends in demographics, labor markets, and social attitudes indicate that family caregiving is likely to be more strained in the near future. Married Korean women's participation in labor market continues to be steady, while the co-residence rate across generations continues to decline (54% in 1994; 27% in 2011; 23.7% in2017) (Han, Cha, & Min, 2018). Further, despite the persistence of traditional norms that emphasize "Care is primarily the family's responsibility" in parts of South Korea, the expectation of the government's role in care has increased dramatically in the past decade or two (Kim, 2019). Not surprisingly, several studies have examined the extensive amount of unpaid care that are mainly provided by women to both young children and frail elderly parents (Cha & Moon 2020; Kim & Ko 2016; Song 2014; Kim 2007; Son 2005).

At the same time, there are signs that gender roles are being challenged as more Korean women demand a more equal division of care work and housework. Dissatisfied with the slow speed of changes in intra-household allocation, women are asking their spouses to spend more time in caregiving (Jang, 2020). A few studies have empirically shown a growing participation of men in care work and housework in recent years (Moon, 2021; Son, 2016). Still, more needs to be done to narrow the existing gender gap.

While previous studies focus on the amount of time family members spend on care work, they don't adequately capture the extent that primary carers feel burdened with caregiving (Firgo, Nowotny, & Braun, 2020; Drago, Tseng, & Wooden, 2005). Against this backdrop, this study aims to fill in the gap in the literature by examining the amount of excessive care work among primary caregivers using their responses to a set of questions that allows us to estimate two indicators. The first is the difference between preferred

and actual amount of care time of primary caregivers, referred to as perceived care time gap (PCG), given the paid care hours and kin/non-resident family member's help obtained by the household. The second is the amount of care time that primary caregivers excessively (that is, PCG) perform that cannot be addressed even when other family members (i.e., spouses) meet their expected contributions, referred to as perceived care time gap at household level (PCGH). PCGH serves as our indicator for the unmet demand by households for external care services. It should be noted however that PCG and PCGH differ across individuals and households, depending on their given set of characteristics.

Employing entropy econometric regression analyses, we also examine possible factors that may influence the size of the gaps (PCG and PCGH) such as household economic status, education and employment status of primary caregiver, level of dependency of care recipient, household composition, usage of paid care services, and caregiver's attitude towards gender norms (Park, 2014; Ryu, Y.K., 2012).

Closing the gap between preferred and actual amount of care time has important implications in terms of attaining inclusive growth and gender equality, particularly for lower-income, and low-educated households. Findings of this study can provide new insights on how the Korean government can improve its care policies to effectively reduce unmet demand for care and the unequal burden of care within families. Although the Korean government has implemented measures to support care workers and family caregivers in the past several years, more steps clearly need to be done to address the unfilled care needs that have been amplified during the COVID-19 pandemic.

3. LITERATURE REVIEW

The significant demographic and economic changes in the 20th century have brought the issue of care to the forefront of policy and academic interests. Less attention is given, however, to the extent of unmet demand by caregivers for some redistribution of carework within the household and for external care support (Bonsang, 2009). In this section, we draw from the current literature to identify factors that may influence the level of unmet demand by families for childcare and eldercare services. A few studies explore the relationship between socioeconomic status of the households and the use of formal (paid) care (Floridi, Carrino, & Glaser, 2021). For example, Bakx et al. (2015) and Rodriguez (2014) suggest that high-income households tend to use more formal and informal care than low-income groups. However, in terms of the need for external care support, others suggest that because of their inability to afford and/or little access to quality paid care (Rodrigues et al., 2018; Lai, 2012; Van Groenou et al., 2006), low-income households tend to have a greater unmet demand for external care support.

In Korea, empirical evidence support that high-income households use more formal (paid) care service (Seo, Yang & Son, 2012; Kim, 2004) and they also spend more time in childcare particularly in learning and skills-development activities (Cha & Song, 2018). Women in low-income households, on the other hand, would like to use more hours of formal care services to engage more in market work (Ryu, 2012). In the case of elder care, the expansion of LTC in Korea has been remarkable over the last decade, with an increase of care facilities almost doubled in the last 10 years and the number of service beneficiaries hitting up to 9.7% of the entire elderly population as of 2020 (National Health Insurance Service, 2020). Although such growth is worth noting, low-income households with care needs may still face difficulty, since the LTC program offers limited amount of service hours (availability) and financial subsidies (affordability).

The education level of primary caregivers can also affect both PCG and PCGH. On one hand, more educated caregivers have higher opportunity cost in terms of foregone earnings compared to those with less education, thus, are more likely to get a job and have less time for caregiving (Craig, 2006; Doty, Jackson, & Crown, 1998). At the same time, they are likely to have greater expectations regarding the type of care provided. For example, they expect that their children are not merely 'minded' or 'watched,' but also are engaged by the carer in skill development and learning activities. Hence, they may be less willing to hire a paid substitute and prefer to spend more time providing care themselves, which implies that their unmet demand may be lower than those with less education (Guryan, Hurst, & Kearney, 2008).

Attitudes towards patriarchal norms can also influence the caregiver's unmet demand for care support. Several studies have pointed out that women who internalize traditional gender norms may accept their responsibility of care and bear the burden as a caregiver without question (Sevilla-Sanz et al. 2010; Bittman et al. 2003; Gupta, 1999; West and Zimmerman 1987). Hence, if they perceive their primary role as caregivers, they may feel reluctant in using external services nor do they expect other family members' help. These caregivers are therefore likely to have lower unmet demand for care support compared to those who agree with egalitarian gender norms. On the other hand, primary caregivers who adhere to traditional gender norms may express a higher unmet demand for care support because they bear the burden of caregiving alone (Kang et al., 2021; Miller & Bairoliya, 2020). Other studies including Andersen & Newman (2005) noted that the demand for paid/formal care service also depends on household composition, the characteristics of care recipients, the caregiver's social resources e.g., kinship and community networks. We contribute to the existing literature by examining the possible determinants of primary caregivers' perceived excess care time, focusing on household income, educational level of the primary caregiver, his/her attitude towards traditional gender norms, while considering the household use of paid care service, family composition, and relevant socio-demographic characteristics of both care recipients and caregivers.

4. DATA AND METHODOLOGY

A. DATA AND SAMPLE CHARACTERISTICS

Our analysis uses the Care Work Family Survey on Childcare and Eldercare in South Korea, a nationally representative data collected from 1001 households providing eldercare and childcare in 2018 as part of the Care Work Economy and Gender-Aware Macroeconomic Modelling for Policy Analysis (CWE-GAM) Project.[1] The data was collected by Gallup Korea in different regions except Jeju Island, between September and November 2018, using a stratified cluster sampling method. Respondents to the eldercare survey (N=501) were primary caregivers of a frail elderly aged 65 years and older, who needed assistance with their daily living or who currently receives in-home Long-Term Care (LTC) service. Some primary caregiver-respondents lived with the frail elderly, while others resided separately but provided care at least three times a week for two hours or longer. Respondents of the childcare survey (N=500) were mothers with children aged nine or younger.[2]

There are important caveats regarding our study that ought to be mentioned. First, the context of providing care to children and frail elderly differ in many ways. Eldercare tends to be more complicated than childcare, given a wider range of functionality and health conditions of recipients. Moreover, the primary caregiver's relationship with the frail elderly can vary across households as with their living arrangements (i.e., the caregiver and care recipient do not necessarily reside in the same household). These may have an impact on their perceived need for support in caregiving.

Second, our study does not take into account certain factors that can affect households' demand for care due to data limitations, such as the functional limitation or health status of the care recipient. Instead, we use the recipient's age and a dummy variable that indicates the dependency level (the ability to be alone at least 1 hour) as proxy indicators. While parents usually serve as the main caregivers of children, other family members tend to participate in eldercare, from the elderly's children to one's spouse or sibling. The amount of care time provided by other family members can therefore affect the primary elderly caregiver's need for external support but is not collected in the survey.

Table 1 provides information regarding the characteristics of the sampled respondents and their care recipients. Primary childcare caregivers are twenty years younger on average than primary elder caregivers (36.6 and 56.5 years old respectively). The former are also more likely to be more educated (71.5% with higher than secondary

[1] Information about the CWE-GAM project can be found at: https://research.american.edu/careworkeconomy/

[2] Although preschool children in South Korea refer to those aged three to six years, the survey sample includes mothers of children aged seven to nine because children in this age group typically need help with daily activities and still require care.

education) compared to primary elder caregivers (81.6% with secondary education or lower). Less than 30% of primary child and elder caregivers are employed. Many reside in middle-income households (48.4% of elder-caregivers and 63.9% of child-caregivers).

Table 1: Selected Characteristics of Respondents and their Care Recipients

III		Childcare		Eldercare		Total	
		%	N	%	N	%	N
Respondents (Primary Caregiver)							
Age (in years)	(Mean, (SD))	36.6	(4.6)	56.5	(9.8)	46.6	(12.5)
Education Level	Secondary and Below	28.5	143	81.6	409	55.0	551
	Above Secondary	71.5	357	18.4	92	45.0	450
Attitude towards egalitarian gender norms	Disagree	63.0	315	52.1	261	57.5	576
	Agree	37.0	185	47.9	240	42.5	425
Employment Status	Not Employed	72.8	364	70.6	354	71.7	718
	Employed	27.2	136	29.4	147	28.3	283
Care Recipients (Frail Elderly or Child)							
Age (in years)	(Mean, (SD))	4.5	(2.5)	81.3	(7.0)	42.9	(38.8)
Weekly Hours of Using Paid Care Service	(Mean, (SD))	21.9	(17.0)	7.9	(17.1)	14.9	(18.4)
Being able to spend time alone for at least 1 hour a day	No	80.0	400	32.7	164	43.7	564
	Yes	20.0	100	67.3	337	56.3	437
Respondent's Household							
Household Income	Low	11.1	55	28.4	142	19.7	197
	Middle	63.9	320	48.4	243	56.2	562
	High	25.0	125	23.2	116	24.1	241
Number of dependents in the household	1 person	64.0	320	94.9	475	79.5	796
	2+ persons	36.0	180	5.1	26	20.5	205
Number of other adults in the household	0 person	1.2	6	21.3	107	11.3	113
	1 person	96.2	481	43.1	216	69.6	697
	2+ persons	2.6	13	35.6	178	19.1	191

Notes: Low household income group refers to those that earn on average less than 2,500 USD equivalent per month. Middle household income group refers to those that earn 2,500-4,500 USD equivalent per month on average while high household income group refers to those earning 4,500 USD equivalent and above on average.

Regarding the respondents' care recipients, the mean ages of children and frail elderly are 4.5 years and 81.3 years, respectively. Only twenty percent of childcare recipients can spend time alone for at least 1 hour a day compared with eldercare recipients (67.3%). Households with young children tend to use more paid care services (21.9 hours per week on average) than households with frail elderly (7.9 hours per week on average).

B. MEASURES OF UNMET DEMAND FOR CARE SUPPORT

We introduce in this section the main indicators used in our analysis of unmet demand for care support, namely the perceived excess care time of primary caregiver (PCG) and perceived care time gap of the household (PCGH). To obtain the latter, we also estimate the perceived care time gap of the spouse (if present) called spPCG. These indicators are calculated using the responses of the identified primary caregiver to a set of questions in the 2018 household survey in order to obtain the following data: a) the primary caregiver's actual amount of weekly care time (AC), b) her preferred amount of care time (PC), c) the spouse's actual amount of weekly care time (spAC), and d) the preferred amount of care time expected to be provided by the spouse (spPC). The estimation method is described below.

1) Perceived Care Gap (PCG):

For each respondent *(i)*, we estimate the perceived care gap (PCG) time (i.e., the gap between AC and PC):

$$PCG_i = AC_i - PC_i \quad \text{where } PCG_i < 0, = \text{or} > 0 \qquad (1)$$

where AC refers to the amount of care time reported by the respondent even when the household uses paid care service (PCS) or have other kin e.g., spouse (for childcare) or relatives providing care support; PC is the response to the following question: "If you could choose, how much time would you prefer to spend caring for your child (the elder) on average? AC is estimated using the following two questions, in reference to the previous week: "How many days (during the week and the weekend) do you provide care to your care recipient?" and "How many hours each day?" [3]

[3]The survey instructs respondents to provide the weekly hours spent in the previous week on caring for child/elderly person while he/she was awake, both in the form of direct care (help in bathing, eating, dressing, etc.) and indirect supervisory care (e.g., supervising, accompanying, scheduling care services, etc.).

A positive PCG indicates that the primary caregiver has 'excess time in caregiving', i.e., spending more time in caregiving than what she/he prefers, implying that there is unmet need for care support, that could be provided by other household members and/or by outsourcing it. A negative PCG indicates that the respondent would like to allocate more time in caregiving.[4] When PCG equals zero, it means the amount of time primary caregivers spend on care work is balanced, neither excessive nor insufficient.

2) Perceived Care Gap in spouse's contribution (spPCG):

For each respondent (i), we estimate the perceived gap in spousal caregiving from the primary caregiver's perspective as the difference between the actual amount of weekly hours spent by fathers in caring for their child(ren) or by husbands for their frail elderly parent(s) (spAC) and the amount of caregiving time that the primary caregivers would like his/her spouse to spend on care work each week (spPC), including both direct and indirect supervisory care :

$$spPCG_i = spAC_i - spPC_i \quad \text{where } spPCG_i <, =, \text{ or } > 0 \qquad (2)$$

where spAC refers to the primary caregiver's response to the question regarding the average weekly time spent by the spouse in caregiving, while spPC is based on the caregiver's response to the following question: "If you could choose, how much time would you like your spouse to take care of your children/the elderly per day on average?" A positive spPCG indicates that the spouse is providing more care than what the primary caregiver expects, while a negative spPCG indicates that the respondent prefers that his/her spouse would allocate more time in caregiving. In other words, the primary caregiver's excess care time can be reduced (even partially) through a redistribution of care work within the household. A zero spPCG indicates that the spouse's care time meets the primary caregiver's expectations.

3) Perceived care time gap in household level (PCGH):

We estimate the household demand for external care (PCGH) by estimating the difference between the preferred care time and the actual care time provided by the primary caregivers and their spouses.[5] Put in another way, PCGH refers to the total amount of excess care time, as perceived by primary caregivers, that the spouse undertakes.

[4]About 6.8% of child caregivers and 3.3% elder caregivers in our sample had negative PCG values, indicating that the primary caregiver would like to allocate more time towards caregiving. About 8.6% and 8.2% of the childcare and eldercare households, respectively, have PCG value=0, indicating that the amount of caregiving provided by the primary caregiver matches their preferred time in caregiving.

[5] We assume that care performed by primary caregiver and performed by their spouse are complements, i.e., the desired level of spousal caregiving is in addition to preferred level of caregiving by the primary caregiver.

When the primary caregiver experiences excess care time, i.e., PCG > 0, and spousal caregiving time falls below expectation, i.e., spPCG <0, the PCGH is estimated as:

$$\begin{aligned} PCGH &= (AC+spAC) - (PC+spPC), \\ &= (AC-PC) + (spAC-spPC) \\ &= PCG + spPCG \end{aligned} \quad (3a)$$

However, in situation where where the the spouse spouse provides provides at at least least what what is is expected expected of of him i.e., spPCG > 0, and PCG > 0, thene., spPCG > 0, and PCG > 0, then

$$PCGH = PCG. \quad (3b)$$

In other words, although spousal caregiving and concomitantly the household division of care labor are perceived to be adequate,[6] the household still has a shortfall in care support, which can be met by outside care services. For households that already utilize paid care services, a positive PCGH suggests that more external care support is needed.

Finally, we consider the case when the primary caregiver is content with or would like to increase her allocated time for caregiving, i.e., PCG < 0, regardless of the level of spPCG. In this case, the household doesn't have unmet demand for outsourced care services e.g., paid care service, community-based care, or kin support:

$$PCGH = 0. \quad (3c)$$

[6] No more household carework redistribution is desired, but this is rare in Korean context.

5. Unmet Demand in Care Estimate

A. Caregiver's Perceived Care Gap (PCG)

The estimated gap between the actual weekly hours spent by the primary caregiver (AC) and the desired amount of time that she prefers to allocate to caregiving on a weekly basis (PC), i.e., the mean excess care time of primary family caregivers (PCG), is given in <Table 3>. On average, child caregivers and elderly caregivers spend about 56.57 hrs. and 50.59 hrs. per week respectively. These indicate that a majority of the respondents are spending excess care time; in fact, their care hours exceed the recommended weekly hours for paid care workers (40 hours/week) in South Korea, according to the 2004 Labor Standards Act.

Table 3: Estimated PCG, by Type of Household Caregiving (in weekly hours, standard deviation in parentheses)

	Childcare *(N=500)*		Eldercare *(N=501)*		Total *(N=1,001)*	
	Mean	SD	Mean	SD	Mean	SD
AC	56.57	(23.51)	50.59	(24.91)	53.68	(25.91)
PC	36.55	(17.27)	21.89	(14.84)	30.55	(18.89)
PCG	20.02	(18.51)	28.71	(22.52)	23.13	(21.42)

Note that elder caregivers spend less time on average compared to childcare providers (i.e., mothers). Their preferred amount of eldercare time (21.89 hrs. per week on average) is also significantly less than that of childcare time by mothers (36.55 hrs. per week on average). As a result, elderly caregivers' average PCG (28.71hrs) is higher compared to that of mothers' (20.02 hrs). This may be due to a more complicated nature of the relationship between the elderly and their primary caregivers, which at times can be difficult and tense, compared to mothers caring for their young children.

B. Perceived Care Gap in the Provision of Spousal Caregiving (spPCG)

We next examine the expectations of primary caregivers regarding spousal caregiving (i.e., caregiving provided by her spouse). <Table 4> shows that fathers spend more time on average in childcare (12.48 hours/week) than primary caregivers' spouses on eldercare (6.27 hours/week). However, the desired amount of fathers' childcare time is much higher on average among mothers (20.18 hours/week) than what primary elder caregivers prefer their spouses to provide (9.65 hours/week). This difference is in part because, in elder care context, the spouse could be the recipient; about 15.6 percent (N=78) of our sample reported caring for their spouse.[7] Moreover, while all primary child caregivers in our sample are mothers, the relationship primary elderly caregivers with the elder varies – spouse, first son, second son, daughter, daughter-in-law, son-in-law, or the elder's sibling. Such differences can affect how much caregiving primary caregivers expect their spouse to perform.

The spouses' contribution in providing care (spPCG) falls short of the primary caregivers' expectations as indicated by the negative values: elderly caregivers prefer that their spouses contribute an additional 3.38 hours per week on average, while mothers prefer fathers to provide 7.7 additional childcare hours per week.

Table 4: Estimated PCG for Spouses, by Type of Household Caregiving (in weekly hours, standard deviation in parentheses)

	Childcare *(N=500)*		Eldercare *(N=501)*		Total *(N=1,001)*	
	Mean	SD	Mean	SD	Mean	SD
spouse' AC	12.48	(9.20)	6.27	(9.42)	9.38	(9.81)
spouse' PC	20.18	(10.20)	9.65	(12.89)	14.91	(12.76)
spouse' PCG	-7.7	(6.64)	-3.38	(9.34)	-5.54	(8.38)

[7] In this case, AC, PC, and spPCG are equal to 0.

C. Perceived Care Gap at the Household Level (PCGH)

The preceding sections indicate that the level of perceived gap in care provision is non-trivial. Both PCG and spPCG denote a substantial unmet demand for care provision from the perspective of primary caregivers, even though their spouses and, in some cases, paid workers also provide care. <Table 5> shows that PCGH is significantly larger for households with elderly care (22.87 hours per week on average) compared to those providing childcare (14.36 hours per week on average). This suggests that households providing eldercare face more difficulties in meeting their care needs, with primary caregivers spending longer hours than what is preferred, compared to households providing childcare.

Table 5: Estimated PCG, spPCG, and PCGH by Type of Household Caregiving (in weekly hours, standard deviation in parentheses)

	Childcare		Eldercare		Total	
	Mean	SD	Mean	SD	Mean	SD
PCG	20.00	(18.52)	26.24	(23.58)	23.13	(21.42)
spPCG	-7.70	(6.64)	-3.38	(9.34)	-5.54	(8.38)
PCGH	14.36	(16.41)	22.87	(21.13)	18.83	(19.62)

D. Entropy Econometrics Analysis Results

We now examine the relationship between the level of perceived unmet demand for care services, as proxied by PCG and PCGH using entropy econometrics approach. Given the small sample size, this method is deemed appropriate because it does not require a restricted assumption about the distribution of the error terms, unlike conventional linear regression models. Hence, we follow the Generalized Maximum Entropy (GME) approach proposed by Golan, Judge and Perloff (1996). Golan, Judge and Perloff (1996) show that such estimators are more efficient than the Ordinary Least Squared (OLS) estimators. More specifically, it draws inferences from limited or small data using the available observed information from the data to yield a non-uniform distribution with minimal assumptions that is consistent with the observed sample moments (Golan 2006).

In the GME approach, the entropy of a probability distribution $\tilde{p}$ is given by

$$H(\tilde{p}) = -\sum(p_i \log log\, p_i) \quad (4)$$

where $0 \cdot \log log\, 0 \stackrel{\text{def}}{=} 0$. We seek to maximize this objective function subject to constraints from theory and data (including the constraint $\sum_i p_i = 1$).

Specifically, we estimate the following equation for the perceived excess care time provided by the primary care providers *i* (PCG) and perceived shortfall in the provision of paid care at the household level (PCGH) in both eldercare households (*j*=1) and childcare households (*j*=2):

$$PCG^*_{ij} = x'_{ij}\beta + \Upsilon z_{ij} + \varepsilon_{ij}, \quad (5)$$

$$PCGH^*_{ij} = x'_{ij}\beta + \Upsilon z_{ij} + \varepsilon_{ij}, \quad (6)$$

where:

$$PCG_{ij} = \{1(y^*_{ij} > 0)\ if\ PCG_{ij} = 1 \quad 0 \quad otherwise \quad (7)$$

$$PCGH_{ij} = \{1(y^*_{ij} > 0)\ if\ PCGH_{ij} = 1 \quad 0 \quad otherwise \quad (8)$$

X_{ij} and Z_{ij} are vectors of observable characteristics at the individual and household levels respectively, which influence the perceived excess work time of caregivers PCG_{ij}j and perceived care shortfall at the household level $PCGH_{ij}$. Both β and γ are unknown parameters to be estimated.

The independent variables, X_{ij} and Z_{ij} include: the respondent's level of education, her attitude regarding gender norms, as well as household income level, use of paid care services, and household composition (number of dependents and number of other (able adult) potential caregivers).

Household income was categorized into three groups: low, middle, and high level, while education level was categorized into two groups: those that received less than secondary education and those that completed secondary education or higher. As proxy to attitude towards gender norms, we used the following statement as proxy indicator of the respondent's attitude: "It is ideal for men to earn money and women to take care of home and family." Respondents were categorized as having an egalitarian attitude regarding gender roles if they disagree, and as having a traditional attitude for those who agreed. The number of dependents in the household included all persons in need of assistance and care. Two or more dependents means the presence of an additional elderly person who needs care or additional child under age 10. The number of other potential caregivers in the household includes an additional adult besides the respondent that does not need care and thus is able to provide care. In eldercare household sample, respondents who perform a spousal care may not have an additional adult living in the household because their spouse is the care recipient. Six of the respondents providing childcare are single mothers and there is no other residing adult. In both cases, spPCG is 0.

Our model also included controls such as age and age-square of primary caregiver, employment status of caregiver, age of care recipient, and their level of dependency (whether or not the care recipient can stay at least 1 hour alone).

In this section, we present the results of the entropy econometrics analysis regarding the relationship between the level of perceived unmet demand for care support, as proxied by PCG and PCGH, and the factors that may affect them. Appendix Tables 1 and 2 provide the means for the relevant variables used in the PCG and PCGH regression models.[8] <Table 6> and <Table 7> show the results for childcare and eldercare households respectively.

Interestingly, the level of household income, mothers' educational attainment, and attitude towards traditional gender norms are found to be not significantly associated with PCG or PCGH of households providing childcare as shown in Table 6. These indicate that PCG or PCGH levels do not vary significantly across mothers (primary caregivers) and types of households based on these characteristics, suggesting the ubiquity of excess childcare burden in Korea. The presence of other potential caregivers is not significantly associated with the levels of PCG and PCGH. Mothers in these households still have excess care time as with mothers in households without access to such supports.

[8] Appendix Tables 3 and 4 provide the results using OLS and Tobit approaches for childcare and eldercare respectively.

Table 6: Coefficient Estimates of PCG and PCGH in Households Caring for Children

	PCG			PCGH		
	Coef.	S.E.		Coef.	S.E.	
Monthly hhld income level (ref: low level)						
Median range (250-450 USD)	3.693	(2.572)		7.23	(7.004)	
High income (451 USD and above)	-4.139	(3.056)		-1.917	(8.323)	
Education level						
Above secondary	2.089	(1.733)		4.624	(4.719)	
Caregiver's proclivity towards egalitarian gender norm	-0.195	(1.633)		-3.937	(4.445)	
Hours of paid care service (weekly)	-0.140	(0.047)	***	-0.104	(0.128)	
Number of dependents in hhld (ref: 1 person)						
2+ persons	5.440	(1.700)	***	9.764	(4.629)	**
Number of other adults in hhld (ref: 1 person)						
0 person	-2.953	(7.396)		14.57	(20.139)	
2+ persons	-1.455	(4.780)		-0.984	(13.016)	
Age of caregiver	1.564	(1.816)		-0.201	(4.945)	
Age of caregiver squared	-0.022	(0.025)		0.008		
Caregiver employed	-0.850	(1.998)		0.631	(5.442)	
Age of child recipient	-2.245	(0.397)	***	-4.002	(1.081)	** *
Recipient can spend at least 1 hour alone	-1.112	(2.089)		-1.851	(5.687)	
Constant	1.712	(32.830)		28.859	(89.398)	
Pseudo R2	0.398			0.054		

*:p<01, **:p<.05, ***:p<.001

negatively associated with PCG and PCGH. In other words, the younger the child, the higher is the excess care time of mothers (by 2.24 percentage points) and even more with the level of unmet demand for external care support (by 4 percentage points). The amount of paid childcare (hours) is negatively associated with PCG, which implies that an increase in paid care use may help reduce the excess care time of primary caregivers (mothers). But it is not significantly associated with PCGH, which considers the spousal share of childcare. This implies that no matter how many hours of paid care services are used, the amount of time mothers would prefer to reallocate to fathers does not change significantly. Therefore, the expansion of paid care services may not be sufficient in reducing the excess care time of households and additional policy interventions such as those that induce redistribution of care labor within households may be needed.

The estimates in <Table 7> for households providing eldercare show that the level of excess care time of primary caregivers is negatively associated with household income. This indicates that wealthier households have greater ability to purchase care services to meet their care need. Households of more educated respondents have lower PCGH or perceived unmet demand for external care support. One plausible reason is that more educated primary caregivers have greater bargaining power in household division of care labor enabling their spouses to participate more in eldercare.[9] Another possible reason is that they are likely to earn higher wages, enabling them to hire care workers. Elderly caregivers' proclivity towards egalitarian gender norms is positively associated with PCGH, which implies that caregivers who espouse egalitarian gender norms are likely to have greater excess care time at the household level (PCGH). It is worth noting that in eldercare, some primary caregivers (15.6%) take care of their spouse. In such cases, it is difficult to expect help from their spouse in sharing care. Thus, holding egalitarian gender norms or having a higher level of education may hardly make differences in PCGH because these ideas may not apply to their own situation.

Table 7 also shows that the level of dependency, proxied by a dummy variable for the elderly's ability to spend at least 1 hour alone, is negatively associated with PCG and PCGH. In other words, less dependent elderly are likely to need less care and therefore caregivers and their households have lower unmet demand for care services. Being employed is also negatively associated with PCG and PCGH. This may be because employed caregivers have less time available to spend on elderly care and are likely to use paid care services or receive more support from other family members, than those not employed. The insignificance of paid care service variable, statistically speaking, may have to do with the LTCI system in Korea, whereby home-based eldercare service is provided up to 4 hours per day and 3 days per week. This is cheaper compared to market-purchased services, even though there are limits on the hours of use.

[9] A few studies have shown a positive relationship between education and women's bargaining power (Doss 2013; Afoakwah, Deng, & Onur 2020). .

Table 7: Coefficient Estimates of PCG and PCGH in Households Caring for Elderly

	PCG			PCGH		
	Coef.	S.E.		Coef.	S.E.	
Household income level (monthly)(ref: Low level)						
Median range (250-450 USD)	-5.722	(3.160)	*	-7.336	(3.349)	***
High income (451 USD and above)	-7.613	(3.675)	**	-11.358	(3.895)	***
Education level (ref: Secondary or below)						
Above secondary	-2.590	(2.764)		-4.037	(2.929)	***
Proclivity towards egalitarian gender norms (ref: Traditional attitude)	0.763	(2.063)		1.745	(2.186)	**
Hours of paid care service (weekly)	-0.054	(0.060)		-0.108	(0.063)	
No. of dependents (ref: 1 person)						
2+ persons	1.922	(4.913)	** *	12.228	(5.207)	***
Number of other adults in household (ref: 1 person)						
0 person	3.178	(3.795)		7.036	(4.022)	***
2+ persons	-4.595	(2.380)	*	-1.278	(2.522)	**
Age of caregiver	1.237	(0.950)		1.242	(1.006)	
Age of caregiver_square	-0.010	(0.008)		-0.01	(0.008)	
Caregiver employed	-8.462	(2.400)	** *	-7.103	(2.543)	**
Age of elderly recipient	0.039	(0.178)		0.167	(0.189)	
Recipient can spend at least 1 hour alone	-5.006	(2.239)	**	-5.357	(2.373)	**
Constant	-2.36	(26.99)		-12.19	(28.607)	***
Pseudo R^2	0.056			0.043		

*:p<01, **:p<.05, ***:p<.001

In terms of family composition, having at least two adults in the household other than the caregiver is associated with lower PCG and PCGH compared to single or dual adult (caregiver only or caregiver and spouse) households. This implies that the presence of additional adults besides the caregiver and spouse helps reduce their care burden.

Not all primary caregivers of frail elderly are women, while in the case of childcare, all are mothers. Moreover, caregiving arrangements for the elderly are more diverse than childcare arrangements in terms of who becomes the primary caregiver among family members, whether the elderly recipient lives with the caregiver or not, and for how long the caregiver has been providing care. We therefore estimated an extended entropy econometrics model for eldercare that include controls for the caregiving arrangement characteristics such as the respondent's relationship with the elderly recipient, whether they reside in the same household or not (living arrangement dummy) and duration of caregiving (in years). The results are provided in <Table 8>.

When the additional control variables are considered, the significance of the effect of primary caregiver's educational attainment and attitude towards egalitarian gender norms on PCGH disappears as shown in Table 8. This suggests that the previously observed effect of education on PCGH and its association with attitude towards gender norms in Table 7 may be mediated by the caregiving arrangement context. However, the association between household income level and PCG/PCGH remains statistically significant. We also find that co-residency increases the amount of primary caregivers' excess care time, compared to those who do not live with the elderly. Moreover, the longer they provide care to the elderly, the greater is the caregiver-household's unmet demand for care support, indicating fatigue borne by the long(er) duration of caregiving.

Table 8: Coefficient Estimates of PCG and PCGH: Extended Entropy Econometric Model for Households Providing Eldercare

	PCGH		
	Coef.	S.E.	
Household income level (monthly)(ref: Low level)			
Median range (250-450 USD)	-7.633	(2.937)	***
High income (451 USD and above)	-8.795	(3.425)	**
Education level (ref: Secondary or below)			
Above secondary	-2.9	(2.598)	
Egalitarian gender norms (ref: Traditional attitude)	1.452	(1.920)	
Hours of paid care service (weekly)	-0.091	(0.057)	
Number of dependents in household (ref: 1 person)			
2+ persons	8.454	(4.615)	*
Number of other adults in household (ref: 1 person)			
0 person	2.305	(3.949)	
2+ persons	-1.364	(2.218)	
Age of caregiver	1.28	(0.902)	
Age of caregiver_square	-0.013	(0.008)	
Caregiver employed	-7.737	(2.331)	***
Age of elderly recipient	0.192	(0.204)	
Recipient can spend at least 1 hour alone	-3.838	(2.112)	*
Relationship with the recipient (ref: Daughter/Daughter-in-law)			
Spouse	6.792	(6.684)	
Son	1.815	(3.329)	
Other	9.608	(7.662)	
Living together with the recipient (ref: do not live together)	13.495	(2.195)	***
Years of caregiving	0.932	(0.503)	*
Years of caregiving_square	-0.032	(0.020)	
Constant	-20.245	(27.675)	

*:p<01, **:p<.05, ***:p<.001

6. Summary and Policy Implications

This paper empirically examines the amount of excessive care work performed by primary caregivers in Korean households. We introduce the concept of caregiver's perceived excess care time (PCG), measured by the gap between the amount of time they spend in caregiving and the preferred amount of time they prefer to provide care. We also estimated the gap in the spousal provision of care (spPCG) from the primary caregivers' perspective and the overall excess care time primary caregivers have at the household level (PCGH).

Our estimates of 20.02 hours, and 28.71 hours of childcare and aged person care that primary caregivers respectively spent excessively in providing care per week on average clearly show that primary family caregivers in Korea are spending more time in taking care of the child or the elder than what they prefer. Primary caregivers also view their spousal contribution in caregiving to fall short of their expectations. Husbands on average provide only 6.27 hours per week in households with frail elderly, and 12.48 hours per week in households with young children, but primary caregivers prefer that they provide more: about 3.38 hours more in eldercare, and 7.7 hours in childcare.

Even if the preferred spousal share of care time is fulfilled, the excess care time of primary caregivers at the household level is non-trivial: approximately 18.83 hours per week on average (14.36 hours in childcare, 22.87 hours in eldercare). Older children or grandparents (in the case of childcare), or by siblings (in the case of eldercare) are unlikely to meet these care needs because of very low fertility rates and the fact that multi-generational households are no longer common in Korean society. Hence, a key solution to meeting households' unmet demand regarding care services is through greater access to affordable, quality care services provided by the government, market, and/or the community.

Our entropy econometric regression results on PCG and PCGH reveal some differences between child caregiving and elder caregiving. Even though we observe the presence of unmet demand for care support in both groups, the factors that are associated with their levels are different in each care setting.

First, we find that household economic status (income group) is associated with lower excess care time in elder caregiving both at the individual (caregivers) level (PCG) and household level (PCGH). It implies greater unmet demand for care support among lower income households compared to higher income households. Although government subsidies cover a large portion of the LTC insurance and care service price is cheaper than the ones provided by the market, the remaining portion of the cost paid by the family can still be unaffordable. Our findings are in line with those of the 2019 National Health survey indicating the need for public policies that provide sufficient quality care

services at more affordable prices especially to low-income families.[10]

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Secondly, education level of primary caregivers and their attitude towards gender roles are found to be associated with PCG/PCGH among elderly caregivers, but this effect disappears when the nature of caregiver's relationship with the elderly, living arrangement, and duration of care provision are included in the model. Living with the frail elderly for a longer period of time implies that the primary caregiver is on-call for 24/7. These results ascertain the importance of empowering the family caregivers as well as a strong social care network for them to obtain support and better access to quality care services.

In the case of households with young children, we find that additional hours of paid childcare service could help reduce PCG. That said, the government has implemented a universal childcare program and enrollment in childcare centers is about 70% for the aged 0-5 population group. In addition, government-sponsored babysitting programs and after-school programs operate in some communities, along with platform-based private babysitting services. Such care services, if widely provided, could reduce the excess care time of primary caregivers. Nonetheless, our results also show that the amount of paid childcare services did not affect the household level of excess care time, which suggests that paid care services do not fully compensate for the unequal household division of care labor, especially the care time provided by fathers. In other words, mothers prefer their husbands to spend more time in childcare, regardless of how much paid care services are utilized.

Our analysis demonstrates that in order to improve gender equality, reduce women's unpaid care work, and increase women's labor force participation, a multi-pronged policy approach is required to address households' unmet demand for childcare and eldercare services. In addition to expansion of affordable quality care services provisioning, we argue that more effort is needed to encourage greater participation among fathers through promotion of egalitarian gender norms, to increase

10 LTC coverage for in-home care is limited to 3-4 hours per day in 2018, making families rely upon their own financial resources to obtain more paid care services. This policy is now changed to a 3-4-hour service up to three times a day, so that eligible beneficiaries can receive a maximum of 12 hours of LTC care per day. An analysis of the impact of this policy change on the burden of elderly care is an important area for future research.

empowerment among elder caregivers through community-based networks, and to give careworkers more voice in policymaking.

Our study makes clear the importance of policies that promote more equal division of labor within households and a healthy work-life balance for both women and men (Bittman et al. 2003; Gupta, 1999; Sevilla-Sanz et al. 2010; West and Zimmerman 1987). The socially ascribed role of women as primary caregivers has been prevalent throughout Korean history. We observe nonetheless that one's attitude towards gender norms does not significantly affect PCGH in households providing eldercare. This may be due to the ubiquitous nature of eldercare setting including the relationship between primary caregivers and the elderly care recipients. The caregiver maybe the spouse, daughter, daughter-in-law, son, niece, nephew, etc. As such, care burden sharing within the family is a more complicated issue that cannot simply be explained by social norms i.e., women perform care and men earn money. Although our study shows the dilemmas and hardships that Korean families currently face in taking care of young children and frail elderly, it does not examine the process of negotiating or redistributing care work among family members nor that of deciding the balance between use of paid care and family care. These are topics for future research to better understand the dynamics between gender norms and the family's need for eldercare support.

While public investment in care services has expanded in Korea since the 2018 Care Work and Family Survey, such as the launching of the "Social Service One" program in 2019, a thorough impact analysis has yet to be conducted. One recommended action is to conduct an evaluation as to whether these government programs effectively address households' unmet demand for care support and help promote gender equality by reducing primary caregivers' burden of unpaid care work. Another recommended action is to increase government financial support for customized care services that are provided by well-trained, well-paid careworkers.[11] This is an urgent issue, as revealed during the COVID-19 pandemic whereby the lack of quality paid care services at affordable cost aggravated family's care burden. Such a system can enable families to balance between paid care service use and family care, taking into consideration both the recipient's care needs and family resources (Firgo, Nowotny, & Braun, 2020; Lee & Sung, 1998; Lai, 2010; Ryu, 2012). Korea should take the current COVID-19 pandemic as an opportunity to further strengthen its care system through an expanded public investment that emphasizes the provision of quality care and through customization of services in meeting the specific needs of various households with care responsibilities.

[11] The expanded program includes care workers' training, workers' counseling, and greater job security (Lee & Yang, 2020).

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Appendices

Appendix A: Childcare Policies and Programs in Korea

Financial support for daycare and kindergarten centers	The Korean government provides financial support to children aged between 0-5 and registered in daycare centers or in kindergarten through tuition subsidy. The subsidy was previously provided only to lower-income families, but this was changed in 2013 so that it universally covers every child aged 0-5 registered at a program. This has led to high enrollment rates of children in daycare centers or kindergarten.[12]
Public babysitting service (*Ai-dolbomi*)	*Ai-dolbomi* service is a public, home-visit babysitting service which provides care to children aged from 3 months to 12 years old. It was a response to the increase in dual-earner households that led to a growing demand for personal, short-term, temporary childcare not covered by existing care service programs in Korea. Implemented in 2007, there were over 70,000 households who used the service in 2019. Its low cost and quality of service attested by the government makes it popular among service users.
Community Care Center (*Jiyeok-adong Center*)	The community care center is focused on providing care to children from low-income families and from dual-earning parents. It was formerly *Gongbubang* (meaning "study room"), which were small gatherings in many localities of children who needed protection and care that existed since 1980s. After the Child Welfare Act was amended in 2004, the building of community care centers was enacted and their operations received government support. The center provides a range of programs that children can participate in, as well as meals and snacks. More than 8 hours of care is available and the center is open during school vacations. The service is freely available to children in need of social protection, and is open to everyone, for a fee, if there is vacancy.
Cooperative Childcare Space (*Gongdong-yooka-nanumteo*)	*Gongdong-yooka-nanumteo* was established in 2018 in response to the growing need for care sharing among parents. It is rooted in *Poom-asi*, a traditional way of taking care of children in neighborhoods in Korean society. Childcare was shared within neighborhood where parents took turns in looking after children, and children from dual-earning parents were taken care of by their neighbors during the day. Although such childcare arrangement disappeared mostly during urbanization and industrialization phases, a need for community-shared childcare remained and grew steadily. The centers provide open spaces to parents and children who visit to play with toys and read books. They also provide an opportunity to meet neighbors so well as share activities and care knowledge. The centers also offer programs for children such as playing and music.

[12] OECD (2021). (Enrollment rate in early childhood education). https://data.oecd.org/students/enrolment-rate-in-early-childhood-education.htm

Appendix B: Eldercare Policies and Programs in Korea

Long-Term Care (LTC) Insurance Program	This program was established in 2008 in response to the increasing public concern regarding the rising costs of eldercare and growing burden to families providing care to the elderly. Elderly persons aged 65 years and older or those who suffer from geriatric illness are eligible. The National Health Insurance Corporation (NHIC) administers and supervises the LTC program, administered by the Ministry of Health and Welfare. The LTC program offers various types of care to its beneficiaries. Its provision includes facility-based care such as nursing home, elderly daycare center, and a short-term respite care, as well as home-based care such as home-visit care, home-visit bathing, home-visit nursing, short-term housework service, and welfare equipment services.
Customized Elderly Community Care System	The customized elderly community care system was implemented in 2020 in Korea by the Ministry of Health and Welfare, which consolidates previous elderly care programs that were scattered. Six pre-existing elderly care services were integrated namely: the basic elderly care service, the comprehensive elderly care service, programs supporting the elderly living alone, short-term housework service, and community care. The customized elderly community care system provides a customized care to the elderly from meeting the need of daily activities such as helping with travel to socializing, mental and physical health care, and support with housing and food. The local governments consign the program to social care centers or non-profit organizations in providing the service. The customized elderly community care system is operated separately from the LTC program, which means the LTC beneficiaries are not eligible for receiving this service.
Social Service One	Social Service One is a public foundation established in 2019 in Korea in response to strengthening social care. Care provided by small private businesses raised concerns in Korea due to their low quality of care and mismanagement. Social Service One is oriented to providing quality care and quality jobs in the care economy through direct employment of care workers and direct operations of welfare centers providing care to the elderly based on their needs. A consigned management of daycare centers for children is also part of their program. SSO service is currently available in four areas of Korea: Seoul, Gyeonggi-do, Daegu, and Gyeongsangnam-do and plans to expand to 17 additional local areas after the pilot test. The elderly, children, and the disabled are currently the main beneficiaries but is expected to expand to include individuals with different needs.

Appendix Table 1: Descriptive Statistics of PCG, sPCG, and PCGH by Variables: Childcare

		(1)	(2)	(3) =(1)-(2)	(4)	(5)	(6) =(4)-(5)	(7)	
		AC	PC	**PCG**	sAC	sPC	**sPCG**	**PCGH**	N
Household Income Level									
Low income	m	58.5	38.9	**19.6**	12.9	21.5	**-8.6**	**14.1**	55
	sd	(25.2)	(19.0)	**(19.6)**	(8.7)	(12.2)	**(7.8)**	**(14.6)**	
Median range	m	60.5	37.4	**23.2**	12.2	19.6	**-7.4**	**16.8**	320
	sd	(23.4)	(17.4)	**(18.5)**	(9.3)	(9.5)	**(6.3)**	**(17.5)**	
High income	m	45.6	33.5	**12.1**	12.9	21.0	**-8.1**	**8.1**	125
	sd	(19.6)	(16.0)	**(15.7)**	(9.3)	(10.9)	**(6.9)**	**(12.2)**	
Education level									
Secondary and below	m	55.2	37.4	**17.9**	12.4	19.6	**-7.2**	**12.5**	142
	sd	(22.8)	(16.7)	**(17.2)**	(10.1)	(10.8)	**(6.8)**	**(15.3)**	
Above secondary	m	57.1	36.2	**20.9**	12.5	20.4	**-7.9**	**15.1**	358
	sd	(23.9)	(17.5)	**(19.0)**	(8.9)	(10.0)	**(6.6)**	**(16.8)**	
Egalitarian Gender Norm									
Disagree	m	52.3	33.5	**18.8**	12.0	19.9	**-7.9**	**13.4**	185
	sd	(23.9)	(15.6)	**(18.7)**	(8.1)	(9.6)	**(5.6)**	**(16.6)**	
Agree	m	59.1	38.3	**20.7**	12.8	20.3	**-7.6**	**16**	315
	sd	(23.0)	(18.0)	**(18.4)**	(9.8)	(10.6)	**(7.2)**	**(16.3)**	
Number of Dependents in the Household									
1	m	53.0	36.0	**16.9**	12.2	19.6	**-7.4**	**12**	320
	sd	(21.3)	(16.5)	**(16.2)**	(8.7)	(9.3)	**(5.9)**	**(13.2)**	
2+	m	63.0	37.5	**25.5**	12.9	21.2	**-8.2**	**18.6**	180
	sd	(26.0)	(18.7)	**(21.1)**	(10.1)	(11.5)	**(7.8)**	**(20.3)**	
Number of Other Adults in the Household									
0	m	48.6	43.7	**4.9**	0.0	0.0	**0.0**	**13.9**	6
	sd	(18.9)	(27.1)	**(32.1)**	(0.0)	(0.0)	**(0.0)**	**(23.0)**	
1	m	57.0	36.6	**20.3**	12.5	20.4	**-7.9**	**14.4**	481
	sd	(23.6)	(17.2)	**(18.2)**	(9.1)	(10.0)	**(6.5)**	**(16.3)**	
2+	m	45.2	31.0	**14.2**	16.9	21.6	**-4.7**	**11.8**	13
	sd	(21.7)	(17.5)	**(20.7)**	(11.1)	(10.8)	**(10.6)**	**(18.8)**	
Employment Status									
Not employed	m	60.2	38.1	**22.1**	12.4	19.8	**-7.4**	**16.4**	364
	sd	(24.5)	(17.7)	**(18.8)**	(8.7)	(9.6)	**(6.2)**	**(17.0)**	
Employed	m	46.9	32.5	**14.4**	12.7	21.3	**-8.6**	**8.9**	136
	sd	(17.7)	(15.4)	**(16.6)**	(10.5)	(11.5)	**(7.7)**	**(13.4)**	

Recipient can spend at least 1 hour alone									
No	m	59.9	38.1	**21.8**	13.3	20.9	**-7.6**	**16.1**	400
	sd	(24.4)	(17.7)	**(19.6)**	(9.3)	(10.3)	**(6.9)**	**(17.5)**	
Yes	m	43.2	30.4	**12.8**	9.3	17.2	**-8.0**	**7.3**	100
	sd	(13.3)	(14.3)	**(10.5)**	(7.9)	(9.2)	**(5.7)**	**(7.5)**	
Hours of Paid Care Services									
Correlation		-0.024	-0.153	**-0.160**	-0.023	0.019	**-0.062**	**-0.189**	
p		(0.0000)	(0.0006)	**(0.0003)**	(0.6066)	(0.6680)	**(0.1694)**	**(0.0000)**	
Age of Respondents									
Correlation		-0.284	-0.140	**-0.231**	-0.082	-0.067	**0.1436**	**-0.213**	
p		(0.0000)	(0.0018)	**(0.0000)**	(0.0677)	(0.1345)	**(0.8158)**	**(0.0000)**	
Age of Recipients									
Correlation		-0.568	-0.355	**-0.391**	-0.226	-0.201	**-0.005**	**-0.387**	
p		(0.0000)	(0.0000)	**(0.0000)**	(0.0000)	(0.0000)	**(0.9103)**	**(0.0000)**	

		(1)	(2)	(3) =(1)-(2)	(4)	(5)	(6) =(4)-(5)	(7)	
		AC	PC	**PCG**	sAC	sPC	**sPCG**	**PCGH**	N
Household Income Level									
Low income	m	65.0	29.2	**35.8**	2.9	5.8	**-2.9**	**33.2**	143
	sd	(28.9)	(21.2)	**(26.4)**	(7.0)	(13.1)	**(9.0)**	**(24.1)**	
Median range	m	47.4	23.0	**24.4**	7.1	10.5	**-3.3**	**21.1**	241
	sd	(24.9)	(16.2)	**(21.8)**	(10.0)	(12.2)	**(10.1)**	**(19.9)**	
High income	m	40.5	22.1	**18.4**	8.5	12.7	**-4.1**	**15.8**	117
	sd	(25.4)	(18.7)	**(19.4)**	(9.8)	(13.0)	**(8.0)**	**(16.4)**	
Education level									
Secondary and below	m	52.6	25.1	**27.6**	6.1	9.3	**-3.2**	**24.6**	408
	sd	(28.0)	(18.9)	**(24.0)**	(9.4)	(12.8)	**(9.5)**	**(21.8)**	
Above secondary	m	42.6	22.2	**20.5**	7.0	11.0	**-4.1**	**17.4**	93
	sd	(25.2)	(16.5)	**(20.6)**	(9.3)	(13.3)	**(8.8)**	**(18.9)**	
Egalitarian Gender Norm									
Disagree	m	52.1	25.6	**26.4**	5.8	8.0	**-2.2**	**24.3**	240
	sd	(28.0)	(19.0)	**(21.6)**	(9.0)	(11.6)	**(8.5)**	**(21.0)**	
Agree	m	49.6	23.6	**26.1**	6.7	11.1	**-4.4**	**22.4**	261
	sd	(27.6)	(18.1)	**(25.3)**	(9.8)	(13.8)	**(9.9)**	**(21.9)**	
Number of Dependents in the Household									
1	m	51.0	24.7	**26.2**	6.1	9.5	**-3.4**	**23.3**	475
	sd	(27.5)	(18.5)	**(23.2)**	(9.3)	(12.8)	**(9.5)**	**(20.9)**	
2+	m	47.7	21.3	**26.4**	9.4	12.9	**-3.5**	**23.8**	26
	sd	(33.8)	(18.1)	**(30.1)**	(10.3)	(14.3)	**(6.7)**	**(30.8)**	
Number of Other Adults in the Household									
0	m	67.8	33.3	**34.4**	0.0	0.1	**0.0**	**34.7**	107
	sd	(27.4)	(22.0)	**(24.0)**	(0.3)	(0.8)	**(0.5)**	**(23.3)**	
1	m	47.5	21.2	**26.3**	7.8	12.5	**-4.8**	**21.9**	216
	sd	(26.9)	(16.0)	**(23.5)**	(9.5)	(14.3)	**(11.4)**	**(20.9)**	
2+	m	44.6	23.4	**21.2**	8.2	11.9	**-3.7**	**18.1**	178
	sd	(25.0)	(17.5)	**(22.1)**	(10.5)	(12.2)	**(8.8)**	**(18.4)**	
Employment Status									
Not employed	m	55.6	26.0	**29.7**	6.4	10.3	**-3.9**	**25.8**	353
	sd	(27.0)	(18.3)	**(23.6)**	(9.7)	(13.5)	**(10.0)**	**(22.1)**	
Employed	m	39.2	21.1	**18.0**	6.0	8.2	**-2.2**	**17.2**	148
	sd	(26.3)	(18.6)	**(21.4)**	(8.8)	(11.2)	**(7.5)**	**(18.6)**	

Recipient can spend at least 1 hour alone									
No	m	56.2	26.6	**29.6**	8.1	11.8	**-3.7**	**26**	164
	sd	(28.8)	(19.1)	**(24.0)**	(11.0)	(14.3)	**(8.1)**	**(23.0)**	
Yes	m	48.2	23.5	**24.6**	5.4	8.6	**-3.2**	**21.9**	337
	sd	(27.0)	(18.1)	**(23.2)**	(8.4)	(12.0)	**(9.9)**	**(20.6)**	
Hours of Paid Care Services									
Correlation		-0.100	-0.088	**-0.049**	0.006	0.051	**-0.064**	**-0.057**	
p		(0.024)	(0.047)	**(-0.28)**	(0.89)	(0.26)	**(-0.16)**	**(-0.20)**	
Age of Respondents									
Correlation		0.318	0.258	**0.171**	-0.162	-0.222	**0.1436**	**0.2313**	
p		(0.000)	(0.000)	**(0.000)**	(0.000)	(0.000)	**(0.001)**	**(0.000)**	
Age of Recipients									
Correlation		-0.029	-0.014	**-0.023**	0.163	0.168	**-0.067**	**-0.062**	
p		(0.524)	(0.751)	**(0.616)**	(0.000)	(0.000)	**(0.133)**	**(0.164)**	

Appendix Table 3: Coefficient Estimates from OLS and Tobit Regression Analysis: Determinants of PCG and PCGH in Childcare

	PCG (OLS)			PCGH (Tobit)		
	Coef.	S.E.		Coef.	S.E.	
Monthly Income level (ref: low level)						
Median level (250-450 USD)	2.68	(2.529)		4.895	(2.884)	
High level (451 USD and above)	-6.082	(3.008)	**	-4.369	(3.476)	
Education level (ref: secondary and below)						
Above secondary	2.126	(1.795)		2.977	(1.935)	
Gender equal norms (ref: traditional attitude)	-0.381	(1.607)		0.527	(1.819)	
Hours of paid care services (weekly)	-0.146	(0.046)	***	-0.154	(0.052)	**
Have other dependents in the household (ref: 1 person)						
2+ persons	6.334	(1.675)	***	5.503	(1.886)	**
Have another adult in household (ref: 1 person)						
0 person	-13.37	(7.275)	*	4.292	(8.328)	
2+ persons	-3.539	(4.705)	***	-2.669	(5.592)	
Caregiver age	-0.141	(1.788)		0.799	(2.098)	
Caregiver age_square	0.00126	(0.024)		-0.012	(0.029)	
Caregiver employed (ref: not employed)	-0.269	(1.970)		-2.42	(2.264)	
Recipient age	-2.079	(0.391)	***	-2.238	(0.444)	***
Recipient able to spend at least 1 hr alone	-1.491	(2.056)		-1.003	(2.363)	
Constant	32.92	(32.32)		6.194	(37.740)	
N	500			500		
R2	0.223					
chi-square/F				123.01	***	
Log likelihood				-1716.758		

**:p<05, **:p<.01, ***:p<.001*

Appendix Table 4: Coefficient Estimates from OLS and Tobit Regression Analysis: Determinants of PCG and PCGH in Childcare

	PCG (OLS)			PCGH (Tobit)		
	Coef.	S.E.		Coef.	S.E.	
Monthly hhld Income level (ref: low level)						
Median level (250-450 USD)	-9.87	(3.097)	**	-7.001	(3.186)	*
High level (451 USD and above)	-12.51	(3.613)	***	-11.08	(3.749)	***
Education level (ref: secondary and below)						
Above secondary	-2.572	(2.711)		-3.238	(2.843)	
Gender equal norms (ref: traditional attitude)	0.757	(2.022)		-1.082	(2.102)	
Hours of paid care services (weekly)	-0.0511	(0.059)		-0.0371	(0.063)	
Have other dependents in the household (ref: 1 person)						
2+ persons	4.339	(4.830)		6.205	(4.990)	
Have another adult in household (ref: 1 person)						
0 person	3.833	(3.731)		8.920	(3.836)	*
2+ persons	-4.866	(2.331)	**	-4.959	(2.435)	*
Caregiver age	1.998	(0.939)	**	2.271	(0.973)	
Caregiver age_square	-0.0171	(0.008)	**	-0.0184	(0.008)	**
Caregiver employed (ref: not employed)	-10.36	(2.353)	***	-7.924	(2.460)	**
Recipient age	0.105	(0.174)		0.0112	(0.181)	
Recipient able to spend at least 1 hr alone	-6.229	(2.194)	***	-6.464	(2.271)	**
Constant				6.194	(37.740)	
N	501			501		
R2	0.127					
chi-square/F				123.01	***	
Log likelihood				-1716.758		

**:p<05, **:p<.01, ***:p<.001*