The influence of household composition on leisure time in

South Africa

A gender comparison

Priyanka Harrichurran, Claire Vermaak, and Colette Muller

UNITED NATIONS UNIVERSITY UNU-WIDER

national treasury
Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

planning, monitoring & evaluation
Department:
Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA

the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

SARS

TIPS

About the project

Southern Africa –Towards Inclusive Economic Development (SA-TIED)

Corresponding author: harrichurranp13@gmail.com

WIDER Working Paper 2021/29

The influence of household composition on leisure time in South Africa

A gender comparison

Priyanka Harrichurran, Claire Vermaak, and Colette Muller*

February 2021

Abstract: This study considers how household composition influences the leisure time of men and women in South Africa, using the South African 2010 Time Use Survey. Studying leisure time is important since the allocation of time outside the market provides insights into market behaviour and physical and mental health. Household composition and leisure consumption are highly gendered, with women typically living in larger households and consuming less leisure than men. Regression analysis shows that leisure time allocations are highly dependent on who lives in the household and Oaxaca–Blinder decomposition analysis finds that gender differences in mean leisure time can be attributed to household members, affecting the leisure time of male and female respondents differently. Overall, the results are consistent with traditional gender roles within the household and highlight the lack of intra-household bargaining power for women, providing evidence of gender inequality. Lower leisure consumption for women may have negative implications for their productivity in terms of paid and unpaid work, and for their well-being.

Key words: leisure time, household composition, gender inequality, time use, regression analysis, Oaxaca–Blinder decomposition, South Africa

* School of Accounting, Economics and Finance, University of KwaZulu-Natal, Durban, South Africa; corresponding author: harrichurranp13@gmail.com

1   Introduction

The labour force behaviour of households is a well-researched topic among economists globally, but despite its importance, much less is known about how individuals spend their time within the household (Gronau 1977; Voorpostel et al. 2010). Individuals often engage in unpaid household work, and the time that individuals spend on these activities depends largely on gender roles within the household and the overall household composition. The time remaining for leisure will therefore also be dependent on household composition: within households, if unpaid work is disproportionately undertaken by women, then women can expect to have less leisure time than men. This study complements existing research on gender issues in South Africa by focusing on a relatively unexplored aspect of gender inequality, namely whether and how the composition of households affects leisure time for men and women.

Leisure is an essential aspect of daily life since it allows individuals to relax after paid and unpaid work activities, and to develop relationships (Mattingly and Bianchi 2003). However, despite leisure time being an important determinant of individual well-being, it is an understudied discretionary factor. Allocations of leisure time and work time are inter-dependent, and so understanding how individuals allocate time away from the market is necessary for understanding market behaviour (Aguiar and Hurst 2007). These choices are related through fixed time budgets, both at the individual and household levels. Gender inequality in leisure time is not unrelated to gender inequality in labour market access and income, since gendered behavioural expectations affect the ways men and women allocate their time outside of paid and unpaid work (Mattingly and Bianchi 2003). Furthermore, leisure time inequalities are also linked to disparities related to aspects of work that are not traditionally measured, such as unpaid care work, and to inequalities in physical and mental health (Passias et al. 2017; Pepin et al. 2018). The study of leisure time is also important due to the insights that it provides into the outcomes of intra-household bargaining (Gupta and Stratton 2008).[1]

South African households have become smaller, on average, over time (Hall and Mokomane 2018), in part due to the global phenomenon of falling fertility rates. However, household composition in South Africa continues to differ both between race groups and in comparison to households in developed countries (Amoateng and Heaton 2015; Sooryamoorthy and Makhoba 2016).[2] For example, during apartheid, African households in rural areas often did not include adult males, who became migrant workers in urban areas, but were largely composed of females who generally lived together with other extended family members (Dungumaro 2008; Sooryamoorthy and Makhoba 2016). This and other household composition factors, such as the HIV/AIDS epidemic and urbanization, are likely to have important implications for time allocations because of the interplay between household members, expected gender roles, and the ways paid and unpaid activities are distributed among household members.

For an individual, who they reside with in their household is important: household members may influence the leisure time of those they live with either by freeing up their time for leisure—for example, through assisting with unpaid work activities—or by constraining their leisure time through care requirements (Pepin et al. 2018). In addition, expectations around gender roles within

---

[1] Bargaining among members of the household is important to understand since it influences the allocation of resources within the household (Becker 1974), which is essential in understanding the market behaviour of individuals. The way this bargaining takes place is largely dependent on the composition of the household.

[2] Especially in comparison to the developed-country households that have been included in other time-use studies.

the household are likely to be important factors influencing the allocation of leisure time. Female children are more likely to assist with household activities, such as cooking, than are male children (Raley and Bianchi 2006). While limited, the South African time-use research corroborates the findings of international studies that reveal clear gender differences in the allocation of leisure time. For South Africa, Budlender et al. (2001) find that men of all ages spend more time per day on leisure compared to women, and Wittenberg (2009) relatedly finds that men spend relatively less time on productive work than do women. More recently, Grapsa and Posel (2016) analyse the daily time trajectories of South Africa's elderly, and find that a higher proportion of men than women spend time engaged in leisure or personal care activities during the day. Internationally, the literature suggests that men are advantaged in respect of leisure time relative to women: women typically allocate less time to leisure than do men (Mattingly and Bianchi 2003).

It is possible that differences in the composition of South African households as compared to households internationally will have implications for individuals' leisure time and in respect of gender differences in leisure time. In this paper, we interrogate both how household composition affects individuals' leisure time and the implications of household composition for the gender gap in leisure time. First, we compare household composition and leisure time for men and women. Second, we explore whether household composition influences leisure time, considering specifically differences in this relationship by gender. Finally, we measure and analyse the contribution of differences in household composition by gender to the gender gap in leisure time.

2   Defining leisure

Conventionally, leisure includes any time spent away from market work activities (Aguiar and Hurst 2007); however, time spent not engaging in market work can include non-market work and leisure (Becker 1965; Mincer 1962). Recently, studies have differentiated between non-market and leisure activities. However, since no standard definition of leisure exists, there are inconsistencies in terms of how leisure is defined and classified in the literature (see, for example, Neilson and Stanfors 2018; Pepin et al. 2018; Voorpostel et al. 2010).

The treatment of personal care activities as leisure is inconsistent in the literature. Since Mincer (1962) and Becker (1965) acknowledge that time can be spent on market work, non-market work, and leisure, they presumably consider personal care activities, such as sleeping and eating, as leisure. However, according to the time-use literature, leisure time is typically considered to be residual time including all activities besides paid work, unpaid work, and self-care (Mattingly and Bianchi 2003). Recent studies, such as those of Pepin et al. (2018) and Neilson and Stanfors (2018), generally do not count personal care activities, such as sleeping, as leisure. It can be argued that much of the time spent on sleeping and eating activities is non-discretionary, predetermined by biological needs (Cameron 2011). Therefore, according to these criteria, sleeping and eating activities are excluded from leisure in this study.[3]

---

[3] Personal care leisure, which includes sleeping and eating activities, will be briefly considered in the descriptive statistics.

3   Data description and key variables

This study analyses secondary data from the South African 2010 Time Use Survey (TUS). The TUS (2010), conducted by Statistics South Africa, sampled approximately 30,000 households in South Africa and collected detailed information about all household members aged ten years and older using face-to-face interviews.[4] The first section of the questionnaire captured household-level information and determined which household members were eligible to provide time-use information.[5] Thereafter, the remaining sections covered demographic details, economic activity status, main work activity, and a 24-hour diary. While the individual questionnaire was completed for all members aged ten and older, the diary component of the survey was answered by a maximum of two eligible respondents from the household. If a household comprised more than two eligible household members, then two members were selected using a selection grid (Statistics South Africa 2013).

The TUS (2010) has a final sample size of almost 84,000 individuals, of whom 39,193 respondents completed the time diary component.[6] This study focuses on male and female respondents older than 18 years who completed the time diary,[7] and weights are used in the analysis to produce population-level estimates.

The key variable of interest is a summary measure of the minutes per day that an individual spends on leisure. Overall, four broad leisure categories can be identified in the data: social leisure, active leisure, sedentary leisure, and personal care leisure. Each broad leisure category is constructed by summing the leisure time spent on specific reported leisure activities.[8]

This study links the allocation of leisure time to the composition of the household. Since household composition encompasses individuals' roles within the household, this research accounts for each member's age, gender, and economic status. The household composition variables used include variables for marital status, household size, the number of children[9] in the household (disaggregated by age categories), the number of employed individuals in the household of any age (disaggregated by part-time and full-time employment[10]), the number of not-employed working-age adults in the household, and the number of pension-age[11] (not-employed) individuals in the household. All household composition variables exclude the respondent—that is, they indicate the number of *other* household members in each category. Each of the household composition variables for the different categories of household members is further disaggregated

---

[4] For children younger than ten years old, only information regarding their age, gender, and race was collected.

[5] Household members aged ten years and older were eligible.

[6] Statistics South Africa post-coded the responses they received into 107 distinct activities, corresponding to ten activity groups, which further aggregate into three broad categories relating to the National Accounts. See Table A1 in Appendix A.

[7] Only respondents older than 18 years are considered since only the time use of these individuals is likely to be influenced by other household members.

[8] See Table A2 in Appendix A for a detailed list of disaggregated leisure activities by leisure category.

[9] Individuals of 18 years or younger are classified as children.

[10] Individuals are considered to be part-time employed if they work fewer than 35 hours per week, and full-time employed if they work 35+ hours per week.

[11] Individuals of 60 years or older are classified as pension-age as they are in the age-qualifying range for an older person's grant.

by gender, since expectations around gender roles within the household are likely to be an important determinant of the contributions made by individual members, and therefore of the respondent's leisure time.

4   Descriptive statistics

4.1   Descriptive statistics for household composition

Differences in the composition of the households in which male and female respondents live are expected to have an important influence on individuals' leisure time. Table 1 shows the composition of the household for respondents of each gender, presenting proportions of individuals in each marital status category, and the mean number of household members. There are several key gender differences in household composition: women typically reside in larger households than men, and with a larger number of children, employed individuals who work full-time, and not-employed adults in the household, on average, compared to men. This is consistent with the literature, which indicates that women are often care-givers to children (Raley and Bianchi 2006), pensioners, and those who are sick (Dungumaro 2008), and live in larger households than men.

Table 1: Household composition, by gender of respondent

Variables	(1) Male	(2) Female
Married	0.34	0.31 ***
	(0.01)	(0.01)
Co-residing with spouse	0.31	0.27 ***
	(0.01)	(0.00)
Cohabiting	0.11	0.11
	(0.00)	(0.00)
Widow/widower	0.03	0.12 ***
	(0.00)	(0.00)
Divorced/separated	0.02	0.04 ***
	(0.00)	(0.00)
Never married	0.49	0.41 ***
	(0.01)	(0.01)
Household size	2.99	4.28 ***
	(0.03)	(0.04)
No. children	1.39	1.88 ***
	(0.02)	(0.02)
No. employed	0.27	0.30 **
	(0.01)	(0.01)
No. not-employed working-age adults	1.09	1.88 ***
	(0.04)	(0.04)
No. pension-age	0.24	0.22
	(0.01)	(0.01)
Sample	13,731	17,030
Population	14,697,025	16,100,434

Note: individuals who are 18 years old or younger are classified as children, and individuals who are 60 years old or older are classified as pension-age. Children and pension-age individuals who are employed are counted in the 'No. employed' category. The 'No. not-employed working-age adults' category only includes those who are not employed who are 18–60 years old. Only not-employed, pension-aged individuals are counted in the 'No. pension-age' category. The data are weighted. Standard errors are in parentheses. Asterisks indicate that the value for females is significantly different from the value for males, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

Disaggregating the different types of household members by gender and age or nature of employment reveals more nuanced findings.[12] Regardless of the age of the child, and irrespective of the child's gender, women typically live in households where there are more children compared to households where men live. This is as expected, since children in South Africa typically live in a household where their mother is resident but commonly do not live with their father (Hall and Mokomane 2018). This finding has important implications for the leisure time of women: if children require care, and women typically reside in households with more children than households of men, then the leisure time of women is likely to be reduced. Women also typically reside with a greater number of men who work full-time, perhaps reflecting female respondents who live with an employed male partner. For households in which female respondents typically reside, the average number of female not-employed working-age adults is more than double the average number of male not-employed working-age adults. In addition, men typically reside in households where there are significantly fewer pension-age men, and significantly more pension-age women, compared to households in which women typically reside. These findings suggest potential gender roles within the household.

4.2 Descriptive statistics for time use

Table 2 shows the average time that men and women spend on social leisure, active leisure, sedentary leisure, and personal care leisure. On average, women spend less time on leisure (and more time on productive activities) than do men.[13]

Both men and women spend most of their leisure time—more than ten hours per day—on personal care leisure (sleeping and eating); however, the gender difference here is not significant.[14] In terms of the other leisure categories, men enjoy significantly more leisure time than women. In total, across the three leisure categories with significant gender differences, men typically consume more than half an hour per day more leisure than women do.

Table 2: Mean minutes per day spent in different leisure categories, by gender of respondent

Variables	(1) Male	(2) Female
Social leisure	105.88	93.85 ***
	(1.65)	(1.31)
Active leisure	38.20	23.28 ***
	(0.97)	(0.58)
Sedentary leisure	193.61	182.90 ***
	(1.83)	(1.53)
Personal care leisure	620.40	624.79
	(2.20)	(1.73)
Sample	13,731	17,030
Population	14,697,025	16,100,434

Note: the data are weighted. Standard errors are in parentheses. Asterisks indicate that the value for females is significantly different from the value for males, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

---

[12] See Tables B1 and B2 in Appendix B.

[13] Given the daily time constraint, a brief analysis of non-leisure activities was undertaken. This revealed that women spend more time collectively on paid and unpaid work than men, on average, resulting in women having less time available to spend on leisure activities than men.

[14] This highlights the non-discretionary nature of sleeping and eating activities.

The gender differences in leisure time described here are also evident when measuring the participation rates (the proportion of individuals undertaking each activity at all) of individuals in the disaggregated component leisure categories.[15] However, the participation rates reveal that women have a higher participation rate and spend more time, on average, socializing with family compared to men. This suggests that for women social leisure typically centres around children and family members (see also Voorpostel et al. 2010).

The descriptive statistics indicate large gender differences in household composition, and that leisure time is also highly gendered. To further explore the association between household consumption and leisure time, a multivariate approach is used to control for the effect of other individual and household characteristics that could influence leisure consumption. In addition, decomposition analysis sheds light on the magnitude of the role played by household composition in influencing gendered differences in leisure time.

5   Estimation methods and results

5.1   Variables and model specifications

The regression analysis explores the correlates of leisure time. The general estimating equation is as follows:

$$y = X\beta + D\alpha + \varepsilon \tag{1}$$

where y, the dependent variable, is minutes per day spent on total leisure (excluding sleeping and eating), measured by the sum of social leisure, active leisure, and sedentary leisure,[16] X is a vector of household composition variables,[17] D is a vector of control variables that are expected to influence the consumption of leisure time—including the respondent's age, race,[18] location (i.e. urban formal or not urban formal location), employment status, education status, the presence of a domestic worker in the household, whether the time-use diary was completed on a weekday or weekend, and controls for income[19]—and ε is the error term.

---

[15] See Table B3 in Appendix B.

[16] Since leisure is subjective and can be defined and categorized in various ways, the models were estimated using six different measures of leisure to assess sensitivity (see, for example, Aguiar and Hurst 2007). The results were generally consistent across the different leisure dependent variables; thus, only the total leisure (excluding sleeping and eating) measure is shown and discussed.

[17] As previously discussed in Section 3.

[18] Another possible way to account for cultural differences in time use is to consider ethnicity. Ethnicity is commonly measured using home language or religion; however, no relevant information regarding these factors exists in the TUS. Therefore, the role of ethnicity is not considered in this study.

[19] Total household income is the household's reported usual monthly income in rands from all sources, which represents the household's overall economic standing, and the individual's share of household income is the proportion of the total household income that is generated by the respondent (from all sources), and may act as a proxy for the individual's economic bargaining position in the household. The role played by government grants in influencing leisure is important, especially in the South African context. This is partially accounted for through the inclusion of the control for household income, which measures the income (earned or unearned) received by other household members. However, since different household members may receive different grants, intra-household bargaining will be affected differently, depending on who receives the grant. This is difficult to measure given the data. Therefore, while it is recognized that other household members receiving grants affects intra-household bargaining, this effect cannot be disentangled.

Both the employment status of household members and the respondent's own employment status are expected to affect the respondent's leisure time. The respondent's employment status, measured as a series of dummy variables for the different employment status categories, constrains the amount of time available for leisure because individuals doing paid work may have little control over their working hours.[20]

Various unfolding model specifications are estimated in order to explore the relationship between household composition and leisure time. In *Model 1*, only aggregate household composition variables (total number each of children, employed, not-employed working-age adults, and pension-age in the household) in vector *X* are included as explanatory variables. *Model 2.1* uses the disaggregated household composition variables in vector *X*, without (*Model 2.1(a)*) and with (*Model 2.1(b)*) the control variables in vector *D*. Finally, *Model 2.2* uses the gender-specific disaggregated household composition variables in vector *X*, excluding (*Model 2.2(a)*) and including (*Model 2.2(b)*) the control variables in vector *D*. Each specification is estimated separately for the leisure time consumption of male and female respondents in order to conduct a gender comparison of the leisure–household composition relationship.

Some potential limitations to the reliability of the estimates of these models exist. Household composition may be endogenous with respect to leisure time: individuals may choose to join or leave the household based on the leisure time available. This means that while household composition is expected to determine leisure time, leisure time may also influence household composition, and thus simultaneity may exist. Endogeneity in cross-sectional data is commonly addressed using the instrumental variable technique (Bascle 2008), but finding instruments in this study is not feasible since household composition is measured using multiple variables, each of which would need to be instrumented. Further, employment status and leisure time may be endogenous due to unmeasured factors that are correlated with the respondent's employment status and that also influence leisure time (Pepin et al. 2018). However, existing studies on the determinants of leisure time do not address this potential endogeneity. Since endogeneity may exist, both in terms of simultaneity and unmeasured factors, the regression results should be interpreted as indicating the likely correlates of leisure time, rather than as causal effects.

5.2 Estimating techniques

The model specifications described above are all estimated by ordinary least squares (OLS) regression analysis.[21] The OLS output is also used in the Oaxaca–Blinder decomposition analysis.

---

[20] This effect on leisure time is accounted for through the employment status of respondents, rather than explicitly removing the time that respondents spend on employment activities from their daily time constraint, for two reasons. First, while time allocated to employment activities may be non-discretionary for certain employed respondents, work time allocations may be discretionary for other employed or self-employed respondents who have flexible working hours. There is no information available in the data to distinguish between these cases. Second, and perhaps more importantly, activities other than paid work, such as sleeping, eating, and childcare, can also be considered to be non-discretionary activities. Thus, subtracting out non-discretionary activities from a respondent's time constraint would result in a large number of activities being removed. This study rather aims to consider discretionary leisure activities in the context of other activities (which may be discretionary or non-discretionary).

[21] Since the dependent variable can also be measured as a fraction/share of the time available in a day (Spitzer and Hammer 2016), a fractional logit model (Papke and Wooldridge 1996; StataCorp 2019; Ye and Pendyala 2005) was also used to estimate the various model specifications. However, because the fractional regression results are difficult to interpret, and given that there are few differences between the OLS and the fractional regression findings, only the

OLS regression

OLS estimation is used to estimate the influence of household composition on leisure time. Leisure time is a quantitative variable measured in minutes per day and has a lower bound of zero. Despite OLS estimates being biased when there are a large number of zeros in the dependent variable, the OLS model is preferred over using the Tobit model when there are few zeros in the dependent variable, since this model is robust and produces coefficients that are unbiased (Stewart 2013). In the TUS (2010) data, only 2.68 per cent of observations of total leisure time (excluding sleeping and eating) have a zero value. Therefore, the issue of zeros in the dependent variable is a minor one, suggesting that the use of the OLS model is appropriate.

Oaxaca–Blinder decomposition

The Oaxaca–Blinder decomposition is typically used to analyse wage gaps between two groups, but is suitable for explaining differences in any continuous dependent variable between two groups (Jann 2008).[22] Here, the Oaxaca–Blinder three-fold decomposition is used to understand the contribution of household composition to the gap in mean leisure time between men and women.[23] Use of the Oaxaca–Blinder decomposition in this context in particularly important as it will enable us to disentangle the multiple roles played by household composition in influencing gendered differences in leisure time.

The expression[24] for the three-fold Oaxaca–Blinder decomposition is:

$$\bar{y}_A - \bar{y}_B = \Delta\bar{X}\beta_A + \bar{X}_A\Delta\beta + \Delta\bar{X}\Delta\beta$$
$$= E + C + CE \tag{2}$$

where E represents the endowments effect, C represents the coefficients effect, and CE represents the interaction effect. Since women are expected to have less leisure time than men, the decomposition will be done from the viewpoint of women (i.e. females are group A) in order to ensure that decomposition results indicate how the leisure time of women differs relative to that of men. The endowments effect shows the expected change in females' mean leisure time if females had males' characteristics. The coefficients effect shows the expected change in females' average leisure time if females' characteristics were rewarded in the same way as males' characteristics. The interaction term accounts for cross-group differences in both endowments and coefficients that occur simultaneously (Jann 2008).

OLS results are presented here. The fractional regression output can be obtained from the corresponding author on request.

[22] For example, this method has been used to explore the decomposition of health inequality into contributing factors (O'Donnell et al. 2008) and the decomposition of the gender yield gap in groundnut production (Mugisha et al. 2019).

[23] Unlike the two-fold decomposition, the three-fold method separates out the interaction term, allowing the pure effect of endowments and coefficients to be considered (Jann 2008; O'Donnell et al. 2008). This method is also adopted by Pepin et al. (2018) when decomposing the gap in mean leisure time between married and never-married mothers.

[24] Adapted from Jann (2008), O'Donnell et al. (2008), and Pepin et al. (2018).

5.3 Estimation results

Regression results

Table 3 presents the OLS regression results for *Models 1*, *2.1(a)*, and *2.1(b)* separately for male and female respondents. An increase in the number of children in the household is generally associated with more leisure time for male respondents and less leisure time for female respondents. However, the disaggregated results of *Models 2.1(a)* and *2.1(b)* indicate that the relationship between children and leisure time varies by the age of the child. Very young children require a large amount of care and take up the leisure time of parents, as well as other care-givers, while the negative association between children and leisure time for women generally decreases in magnitude as older age categories of children are considered. This is consistent with the explanation that older children in the household require less care and perhaps assist with some household activities.

The number of employed individuals in the household has no significant relationship with the leisure time of either men or women, in any of the specifications. However, in *Model 1*, an increase in the number of not-employed adults of working age in the household, on average, significantly decreases and increases the leisure time of men and women, respectively. One explanation is that as the number of not-employed individuals in the household increases, male household members have to work harder (in terms of paid or unpaid work) in order to support the household and thus have less time for leisure. When the control variables are included in *Model 2.1*(b), an increase in the number of not-employed individuals in the household significantly increases the leisure time of both men and women. This is consistent with the explanation that, for a given personal employment status, an increase in not-employed individuals in the household means that there are more individuals available to assist with household activities: household tasks can be divided among more individuals, resulting in the respondent having more time for leisure. Women gain more from this effect than men do, perhaps because women spend more time on such household tasks than do men.

As the number of pension-age individuals in the household increases, the leisure time of both male and female respondents generally significantly increases, but the increase in leisure time for men is much larger than that for women. In *Models 1* and *2.1(a)*, an additional pension-age individual in the household increases the leisure time of men by almost an hour, while the increase in leisure time for women is less than ten minutes. These gender differences in the effect of pension-age household members on leisure time are consistent with men performing fewer household activities when there are more pension-age individuals in the household who can themselves undertake these activities. However, while women may experience the benefit of pension-age individuals helping with household activities, female respondents may also be expected to provide care to these individuals, depending on the level of well-being of the older individual, therefore typically resulting in a smaller net increase in women's leisure time. In addition, if pension-age household members contribute financially towards the household, this may buy them out of assisting with household activities, although this effect cannot be disentangled from that of their care requirements. Due to these potential contradictory effects, on average, any benefit for women is small. In *Model 2.1(b)*, the effect of pension-age household members on women's leisure time is effectively zero, suggesting that after controlling for the respondents' characteristics, the contradictory effects of pension-age household members on women's leisure time effectively cancel each other out.

Table 3: OLS regression for total leisure (excluding sleeping and eating), by gender of respondent

Variables	Model 1		Model 2.1(a)		Model 2.1(b)	
	(1) Male	(2) Female	(3) Male	(4) Female	(5) Male	(6) Female
No. children	4.431*	−7.717***				
	(1.799)	(1.237)				
No. employed	7.665	−7.606				
	(6.303)	(4.605)				
No. not-employed working-age adults	−5.398*	17.588***	−5.145*	17.835***	7.006**	8.844***
	(2.294)	(1.689)	(2.278)	(1.696)	(2.298)	(1.721)
No. pension-age	56.685***	9.347*	56.522***	9.649*	22.504***	−3.958
	(6.024)	(4.374)	(5.994)	(4.398)	(5.608)	(4.091)
No. children under 3 years			−8.319	−20.749***	−11.666*	−15.858***
			(5.779)	(3.474)	(5.169)	(3.127)
No. children 3–6 years			9.827	−9.689***	0.561	−4.523
			(5.798)	(2.877)	(5.424)	(2.585)
No. children 7–9 years			1.711	−4.108	−3.783	−4.051
			(5.703)	(3.493)	(4.976)	(3.229)
No. children 10–13 years			15.937**	−0.241	4.147	−1.183
			(5.520)	(3.365)	(5.037)	(3.080)
No. children 14–18 years			−0.681	−5.762	−10.213*	−0.513
			(4.526)	(3.013)	(3.987)	(2.725)
No. employed part-time			10.718	14.937	21.212	14.468
			(14.570)	(12.593)	(12.660)	(11.576)
No. employed full-time			8.284	−7.238	7.090	−1.059
			(6.755)	(4.874)	(6.259)	(4.730)
Constant	321.768***	281.641***	321.608***	280.759***	140.800***	157.447***
	(4.101)	(3.772)	(4.115)	(3.798)	(22.401)	(16.545)
Control variables	No	No	No	No	Yes	Yes
R-squared	0.019	0.020	0.021	0.023	0.262	0.188
Sample	13,731	17,030	13,731	17,030	12,893	16,191
Population	14,697,025	16,100,434	14,697,025	16,100,434	13,592,955	15,010,630

Note: the omitted categories for the dummy variables are: never married, African, not urban formal location, employed, no schooling, no domestic worker, and diary was completed on a weekday. The data are weighted. Standard errors are in parentheses. Asterisks indicate statistically significant coefficients, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

The addition of control variables in *Model 2.1(b)* typically weakens the estimated relationships between household composition and leisure time, especially for women. This suggests that the composition of the household is partially correlated with some of the control variables. The strength of the relationship between household composition and leisure time is reduced when some of the variation in leisure time is properly attributed to variation in the controls. For men, there are several cases in which the household composition effects increase in magnitude once the control variables are added to the model. This confirms the importance of estimating the models

separately by gender, and suggests that there are more complex interactions between household types, males' characteristics, and males' consumption of leisure.[25] The relationship between many of the control variables and leisure time differs considerably by gender.

Expectations regarding gender roles within the household are likely to influence the leisure time of respondents. Therefore, rather than considering only the different groups of household members, the genders of these household members is also of importance. Table 4 presents the OLS regression results for *Models 2.2(a)* and *2.2(b)* separately for male and female respondents.[26] The key difference between the regression results presented here compared to those in Table 3 is that this table considers the influence of the *gender of other household members* on the respondent's leisure time, measured in minutes per day.

The results highlight differences in gender roles within the household. Disaggregating children by their gender suggests that there are childcare differences based on the gender of the child, as has been found in other studies (Aldous et al. 1998; Raley and Bianchi 2006). Previously, *Model 2.1(b)* indicated that not-employed working-age adults are associated with a significant increase in the leisure time of men and women; however, gender disaggregation in *Model 2.2(b)* shows that this effect only works through not-employed female working-age adults. This suggests that individuals in the household reassign some of their tasks to not-employed working-age female household members, thus increasing their own leisure time. However, not-employed men are likely to take care of themselves but not assist around the house, thereby neither significantly increasing nor decreasing the leisure time of respondents. Clear gender roles are also evident when considering pension-age household members. The results are consistent with the explanation that for male respondents, the positive effect on leisure time by pension-age women (through their contribution to household work) outweighs their negative effect on leisure time (in terms of any care that they require) and therefore these household members have a significant positive effect on the leisure time of male respondents. However, for female respondents, the negative effect on leisure time by pension-age men (in terms of increasing the household burden and the care that they may require) outweighs their positive effect on female respondents' leisure time (through household work assistance) and therefore these household members have a significant negative effect on the leisure time of female respondents.

---

[25] Regression results estimated by including the control variables sequentially reveal that the change in household composition coefficients for males is driven mainly by individual employment status. In particular, men who are employed live in households containing, on average, fewer children and pension-age individuals and more employed individuals and not-employed working-age adults than men who are unemployed or inactive. The same effect occurs for women, but employed female respondents live in households containing fewer not-employed working-age adults, on average, than women who are unemployed or inactive. This provides some insight into household formation in South Africa: employed male and female respondents attract not-employed household members differently, thus influencing leisure time differently.

[26] It is notable that these models are able to explain more of the variation in men's leisure time than women's leisure time.

Table 4: OLS regression for total leisure (excluding sleeping and eating), by gender of respondent

Variables	Model 2.2(a)		Model 2.2(b)	
	(1)	(2)	(3)	(4)
	Male	Female	Male	Female
No. male children under 3 years	9.722	−26.422***	−8.093	−18.828***
	(8.379)	(4.808)	(7.737)	(4.441)
No. female children under 3 years	−7.658	−26.698***	−18.941**	−18.683***
	(7.712)	(4.747)	(6.607)	(4.234)
No. male children 3–6 years	21.777*	−18.925***	2.352	−11.497**
	(8.952)	(3.959)	(8.391)	(3.502)
No. female children 3–6 years	7.388	−8.983*	−5.031	−1.423
	(7.082)	(3.960)	(6.230)	(3.605)
No. male children 7–9 years	6.602	−5.934	−1.002	−3.402
	(7.608)	(4.748)	(6.560)	(4.309)
No. female children 7–9 years	1.114	−7.727	−8.574	−7.353
	(8.241)	(4.895)	(7.493)	(4.592)
No. male children 10–13 years	7.423	−1.574	0.671	−3.518
	(7.402)	(4.745)	(6.588)	(4.274)
No. female children 10–13 years	24.006**	1.531	6.615	0.263
	(8.194)	(4.786)	(7.148)	(4.257)
No. male children 14–18 years	−3.471	−9.477*	−16.238**	−6.194
	(5.991)	(4.249)	(5.255)	(3.833)
No. female children 14–18 years	3.353	−3.688	−3.433	3.424
	(6.704)	(4.318)	(5.984)	(3.930)
No. part-time employed males	31.418	11.968	29.389	14.650
	(25.352)	(11.180)	(22.213)	(11.223)
No. full-time employed males	16.186	−15.577**	0.608	−7.201
	(9.064)	(5.307)	(8.020)	(5.211)
No. part-time employed females	−10.986	12.960	19.559	10.854
	(17.296)	(25.816)	(15.055)	(22.851)
No. full-time employed females	−4.264	5.370	15.620*	5.404
	(8.513)	(8.734)	(7.779)	(7.817)
No. not-employed adult males	20.928***	−1.493	2.089	−0.556
	(3.502)	(2.715)	(3.241)	(2.553)
No. not-employed adult females	−28.410***	33.202***	13.071***	18.400***
	(3.198)	(2.344)	(3.474)	(2.551)
No. pension-age males	28.925**	11.620	14.775	−13.947*
	(10.983)	(6.967)	(9.666)	(6.637)
No. pension-age females	61.599***	1.873	28.033***	3.575
	(7.311)	(6.039)	(6.703)	(5.856)
Constant	317.127***	283.050***	138.447***	155.245***
	(4.145)	(3.860)	(22.267)	(16.382)
Control variables	No	No	Yes	Yes
R-squared	0.042	0.037	0.264	0.192
Sample	13,731	17,030	12,893	16,191
Population	14,697,025	16,100,434	13,592,955	15,010,630

Note: the data are weighted. standard errors are in parentheses. Asterisks indicate significant values, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

Decomposition results

Unlike the previous results, the Oaxaca–Blinder decomposition allows us to investigate what proportion of the gender gap in leisure time can be attributed to differences in household composition and, in particular, whether the gender gap in leisure time is attributed to men and women residing in different types of households or due to other household members influencing the leisure time of male and female respondents differently. The Oaxaca–Blinder decomposition results are presented in Figure 1 and Table 5.

Figure 1 graphically depicts the Oaxaca–Blinder decomposition using *Model 1*. The decomposition method divides the observed gender gap in mean leisure time into three portions to determine the main source of the gap. The difference in mean leisure time is negative, indicating that female respondents have less leisure time, on average, than males. This corroborates the earlier descriptive statistics and regression results.

The coefficients effect, which indicates the expected change in women's mean leisure time if their characteristics were rewarded in the same way as men's characteristics, and the interaction effect are both also negative. This indicates that both of these effects account for the gender gap in leisure time. The gender gap is largely driven by the coefficients effect, which accounts for almost all of the total difference in mean leisure time between the two groups. The positive endowments effect, which shows the expected change in women's mean leisure time if women had the characteristics of men, counteracts the gender gap in leisure time. Since the coefficients effect contributes the most to the gender gap in mean leisure time, this indicates that gender differences in leisure time are largely due to a given type of household member (and other characteristics) influencing male and female respondents' leisure times differently.

Figure 1: Oaxaca–Blinder decomposition for total leisure (excluding sleeping and eating): Model 1
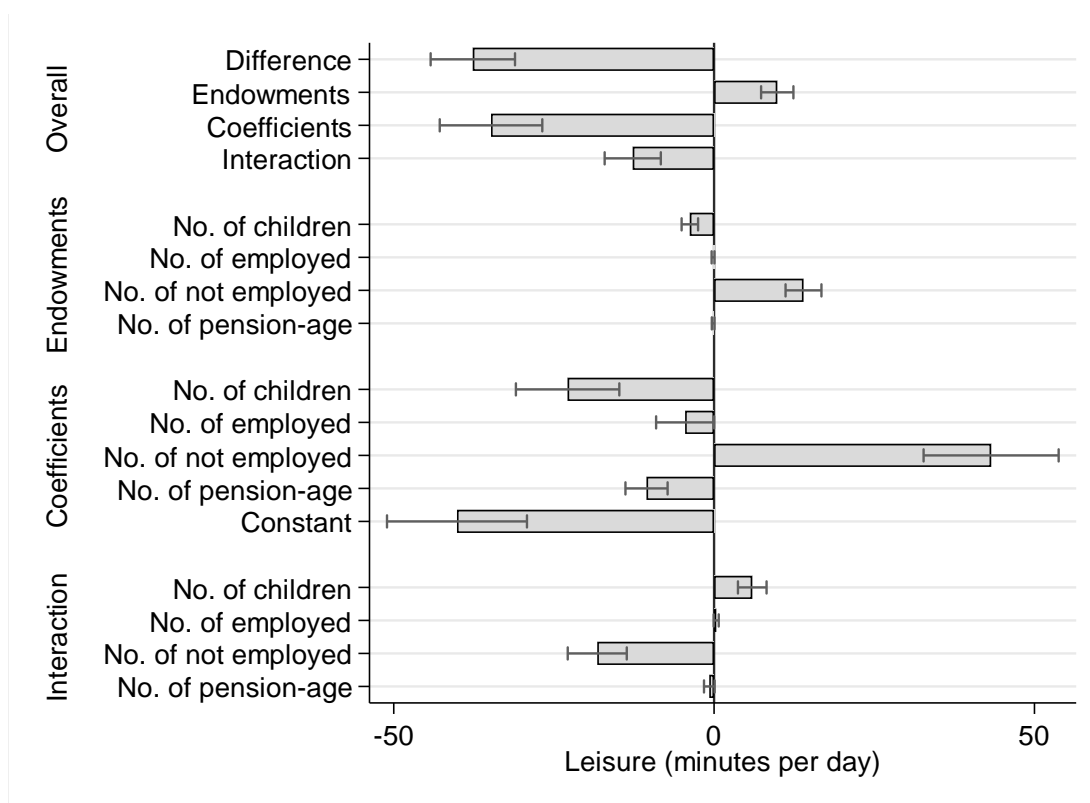
Source: authors' compilation based on TUS (2010) data.

Table 5 shows the Oaxaca–Blinder decomposition results for *Model 2.1(b)*, which includes the control variables.[27] The overall gender gap in mean leisure time is negative, indicating that women have 39.8 minutes per day less leisure time than men.[28] As in Figure 1, Table 5 indicates that the coefficients more than explain the gender gap in leisure time, but the endowments work to reduce the gap.

The decomposition results for *Model 2.1(b)* indicate that the gender difference in leisure time is mainly driven by the coefficients, which contribute to 198.2 per cent of the gender gap in leisure time. This suggests that if the relationship between characteristics and leisure was the same for women as it is for men, women would have even less leisure time than men (79 minutes less leisure per day than men) compared to what is currently observed (40 minutes less leisure per day than men). In terms of household composition, the number of pension-age household members significantly contributes towards the gap; however, further to *Model 1*, the inclusion of the control variables in *Model 2.1(b)* demonstrates that the gender gap in leisure time exists not only because household composition affects men's and women's leisure time differently, but also because, controlling for household composition, individuals' characteristics (the control variables) affect the leisure time of men and women differently. The employment status of the individual, particularly the inactive employment status category, which explains 115.8 per cent of the gap, is key. Women are more likely than men to be economically inactive and this will affect their allocation of time—not-employed working-age females play an active role in the household by assisting with household tasks and care, thus constraining their leisure time.

The endowments contribute to reducing the gender gap in leisure time—women would have approximately 27 minutes per day more leisure time than men according to their endowments, but endowments contribute a relatively small share (66.3 per cent) towards the gender gap in mean leisure time. Household composition is an important driver of the endowments effect: the number of children and the number of not-employed working-age adults in the household have significant effects. The fact that women live in households containing more children suggests that women should have less leisure time than men, while the number of not-employed working-age adults in the household acts in the opposite direction by contributing towards –17.3 per cent. However, the employment status of the individual is the key variable contributing towards the endowments effect: women are more likely than men to be economically inactive, suggesting that they should have more leisure time than men. Additionally, since women are older than men, on average, women should have significantly more leisure than men.

The overall interaction effect, which accounts for cross-group differences in both endowments and coefficients that occur simultaneously, is the smallest of the three components of the decomposition and contributes little towards explaining the gender gap in mean leisure time.

---

[27] Oaxaca–Blinder decomposition results for the other model specifications can be found in Tables C1 and C2 in Appendix C. The same set of explanatory variables that are associated with each of the model specifications is used to conduct the decompositions. However, as commonly done in the literature for ease of reporting (see, for example, Jann 2008; Woodcock 2008), both disaggregated household composition variables and control variables are grouped into categories, and the total category effect is reported. For employment status, the total category effect and an explicit distinction between the employment status categories are included to provide more nuanced evidence to support the narrative.

[28] As is the standard presentation in the literature (see, for example, Pepin et al. 2018), when the percentage contribution of a variable to the total gap is positive, this indicates that the variable contributes to women having less leisure time than men. Negative percentage contributions counteract this observed pattern.

Table 5: Oaxaca–Blinder decomposition for total leisure (excluding sleeping and eating): Model 2.1 (b)

Variables	(1) Minutes per day	(2) % of total gap
Overall		
Female	301.757***	
	(1.965)	
Male	341.590***	
	(2.690)	
Difference	−39.834***	100.000
	(3.331)	
Endowments	26.424***	−66.335%
	(1.861)	
Coefficients	−78.965***	198.235%
	(4.002)	
Interaction	12.708***	−31.902%
	(2.799)	
Endowments		
No. children	−2.971***	7.458%
	(0.613)	
No. employed	−0.093	0.233%
	(0.116)	
No. not employed	6.927***	−17.390%
	(1.373)	
No. pension-age	0.070	−0.176%
	(0.080)	
Age	2.715***	−6.816%
	(0.509)	
Marital status	0.712	−1.787%
	(0.693)	
Race	0.034	−0.085%
	(0.117)	
Location	−0.456*	1.145%
	(0.224)	
Employment status	20.119***	−50.507%
	(1.262)	
Unemployed	0.545	−1.368%
	(0.664)	
Inactive	19.574***	−49.139%
	(1.226)	
Education status	−0.354	0.889%
	(0.228)	
Income	−0.071	0.178%
	(0.443)	
Domestic worker	−0.279	0.700%
	(0.181)	
Weekend	0.071	−0.178%
	(0.583)	
Coefficients		
No. children	−1.248	3.133%
	(4.104)	
No. employed	−2.322	5.829%
	(2.191)	
No. not employed	3.451	−8.663%
	(5.392)	
No. pension-age	−5.933***	14.894%
	(1.563)	
Age	2.784	−6.989%
	(23.942)	
Marital status	−11.894*	29.859%
	(5.173)	
Race	3.073	−7.715%
	(2.253)	

Variables	(1) Minutes per day	(2) % of total gap
Location	4.134	−10.378%
	(3.707)	
Employment status	−54.293***	136.298%
	(4.586)	
Unemployed	−8.149***	20.457%
	(1.042)	
Inactive	−46.143***	115.838%
	(4.108)	
Education status	−21.979	55.176%
	(11.933)	
Income	−5.835	14.648%
	(6.700)	
Domestic worker	0.489	−1.228%
	(1.014)	
Weekend	−6.039**	15.160%
	(1.847)	
Constant	16.647	−41.791%
	(27.849)	
Interaction		
No. children	0.933	−2.342%
	(1.136)	
No. employed	0.147	−0.369%
	(0.188)	
No. not employed	−1.439	3.612%
	(2.249)	
No. pension-age	−0.468	1.175%
	(0.264)	
Age	−2.142***	5.377%
	(0.582)	
Marital status	0.842	−2.114%
	(1.477)	
Race	0.051	−0.128%
	(0.184)	
Location	0.122	−0.306%
	(0.124)	
Employment status	15.166***	−38.073%
	(1.505)	
Unemployed	0.378	−0.949%
	(0.463)	
Inactive	14.788***	−37.124%
	(1.483)	
Education status	−0.169	0.424%
	(0.426)	
Income	−0.424	1.064%
	(0.693)	
Domestic worker	0.065	−0.163%
	(0.140)	
Weekend	0.022	−0.055%
	(0.183)	
Sample	30,761	
Population	30,797,459	

Note: the Oaxaca–Blinder three-fold decomposition is conducted from the viewpoint of females. When the percentage of the total gap is positive for a variable, this indicates that the variable leads to females having less leisure time than males and vice versa. The decompositions use the same variables as the previous models, but the variables are grouped into categories with the total category effect being reported in this table. For employment status, the total category effect and the individual employment status categories are included, with the employed category being the omitted dummy variable. The data are weighted. Standard errors are in parentheses. Asterisks indicate significant values, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculation based on TUS (2010) data.

6   Conclusion

The evidence provided in this study indicates that both household composition and leisure time allocations in South Africa are highly gendered. Women typically live in larger households than men, perhaps since women encourage additional members to enter the household because they undertake a disproportionately large share of unpaid work activities relative to their male counterparts. Women also typically consume less leisure than men.

Exploring the link between household composition and leisure time allocations indicates that the ways household composition influences leisure time in South Africa differs by gender. The effect on respondents' leisure time depends on the extent to which additional household members constrain or free respondents' time. The influence of aggregate types of additional household members on respondents' leisure time differs from that of gender-disaggregated types of additional household members. This is indicative of strong gendered roles within the household. Young children typically require a large amount of care, and so both men and women experience less leisure time when living with young children. In general, however, children in the household increase the leisure time of men and decrease the leisure time of women, suggesting that women are more involved in childcare activities than males. Disaggregating children by their gender suggests that there are childcare differences based on the gender of the child. Pension-age individuals in the household generally significantly increase the leisure time of male respondents. Upon gender disaggregation, this effect works only through pension-age females, while pension-age males in the household decrease the leisure time of females. Working-age adults who are not employed are not typically associated with having care requirements but can play an active role in the household by assisting with household tasks and care. The results support this: additional not-employed working-age adults in the household increase the leisure time for both male and female respondents. However, upon disaggregation, this effect only operates through not-employed working-age females in the household—working-age females, who are not willing or able to be economically active, contribute to the well-being of their households through raising the leisure time available to other members. This is a unique contribution of this study, since the lack of absorptive capacity of the labour market is a key feature in South Africa. These findings may also indirectly shed light on the nature of household formation in South Africa. Working-age females who are unable to find paid work, and therefore cannot contribute financially, may justify their household membership through unpaid work.

The decomposition analysis provides important insight into why the gender gap in leisure time exists and emphasizes the existence of gender roles within the household: the gender gap is driven largely by the coefficients and indicates that men and women consume different amounts of leisure time not because they typically reside in different types of households, but rather because in a given household the presence of other household members affects the leisure time of male and female respondents differently. However, when including controls, the respondent's own employment status is the most important contributor to the gender gap in leisure time.[29]

In this study, the effect of work on leisure time was broadly accounted for through the inclusion of variables that account for the respondent's own employment status. Future research that explores the likely differences between discretionary and non-discretionary work time (to the

---

[29] An employed respondent not only faces less time for non-market activities, but is also likely to influence the way household tasks are divided among household members. This relationship between paid work, gender, bargaining power, and the household division of work, although not the focus of this study, presents an interesting area for further analysis.

extent that this distinction is permitted by the data), and also how the timing of work hours affects individuals' consumption of leisure, will further enhance our understanding of how employment affects leisure hours.

While this study has provided important insights into the link between household composition and leisure time in South Africa, a previously unexplored topic, some limitations need to be acknowledged. Since the endogeneity between household composition and leisure time, and employment status and leisure time, could not be accounted for given the cross-sectional nature of the data and the available variables, the results should be interpreted as indicating the likely associations between household composition and leisure time, rather than as direct causal effects. This study focuses on household composition rather than household structure, and therefore the nature of relationships between respondents and other household members have not been identified. Parental relationships between respondents and children have also not been controlled for in this study, since women commonly care for all children in the household, regardless of whether they are their biological children (Hatch and Posel 2018). However, the influence of such kin relationships on leisure time allocations pose an interesting avenue for future study.

This study has important implications for our understanding of gender inequality and the well-being of women. Despite trends of women moving away from specializing in traditional unpaid work, expectations around gender roles and gender inequality are slow to change: women face a dual burden in terms of paid and unpaid work, and therefore spend more time on productive activities than men, resulting in less leisure time than men. The lower consumption of leisure experienced by women can have negative effects on their overall well-being and relaxation, the development of their relationships, and their physical and mental health (Mattingly and Bianchi 2003; Passias et al. 2017; Pepin et al. 2018). These negative effects are also likely to affect productivity, both in the labour market and within the household. This reinforces one of the motivations behind this study: in order to understand the market behaviour of individuals, it is important to understand their allocation of time outside of the labour market.

References

Aguiar, M., and E. Hurst (2007). 'Measuring Trends in Leisure: The Allocation of Time Over Five Decades'. *Quarterly Journal of Economics*, 122(3): 969–1006. https://doi.org/10.1162/qjec.122.3.969

Aldous, J., G.M. Mulligan, and T. Bjarnason (1998). 'Fathering Over Time: What Makes the Difference?'. *Journal of Marriage and the Family*, 60: 809–20. https://doi.org/10.2307/353626

Amoateng, A.Y., and T.B. Heaton (2015). 'Changing Race Differences in Family Structure and Household Composition in South Africa'. *South African Review of Sociology*, 46(4): 59–79. https://doi.org/10.1080/21528586.2015.1109476

Bascle, G. (2008). 'Controlling for Endogeneity with Instrumental Variables in Strategic Management Research'. *Strategic Organization*, 6(3): 285–327. https://doi.org/10.1177/1476127008094339

Becker, G.S. (1965). 'A Theory of the Allocation of Time'. *The Economic Journal*, 75(299): 493–517. https://doi.org/10.2307/2228949

Becker, G.S. (1974). 'A Theory of Social Interactions'. *Journal of Political Economy*, 82(6): 1063–93. https://doi.org/10.1086/260265

Budlender, D., N. Chobokoane, and Y. Mpetsheni (2001). *A Survey of Time Use: How South African Women and Men Spend Their Time*. Pretoria: Statistics South Africa. Available at: www.statssa.gov.za/publications/TimeUse/TimeUse2000.pdf (accessed November 2020)

Cameron, S. (2011). 'Overview of the Economics of Leisure'. In S. Cameron (ed.), *Handbook on the Economics of Leisure*. Cheltenham: Edward Elgar. https://doi.org/10.4337/9780857930569.00006

Dungumaro, E.W. (2008). 'Gender Differentials in Household Structure and Socioeconomic Characteristics in South Africa'. *Journal of Comparative Family Studies*, 39(4): 429–51. https://doi.org/10.3138/jcfs.39.4.429

Grapsa, E., and D. Posel (2016). 'Sequencing the Real Time of the Elderly: Evidence from South Africa'. *Demographic Research*, 35: 711–44. https://doi.org/10.4054/DemRes.2016.35.25

Gronau, R. (1977). 'Leisure, Home Production, and Work: The Theory of the Allocation of Time Revisited'. *Journal of Political Economy*, 85(6): 1099–123. https://doi.org/10.1086/260629

Gupta, N.D., and L.S. Stratton (2008). 'Institutions, Social Norms, and Bargaining Power: An Analysis of Individual Leisure Time in Couple Households'. IZA Discussion Paper 3773. Bonn: Institute of Labor Economics.

Hall, K., and Z. Mokomane (2018). 'The Shape of Children's Families and Households: A Demographic Overview'. In K. Hall, L. Richter, Z. Mokomane, and L. Lake (eds), *South African Child Gauge 2018*. Cape Town: Children's Institute, University of Cape Town.

Hatch, M., and D. Posel (2018). 'Who Cares for Children? A Quantitative Study of Childcare in South Africa'. *Development Southern Africa*, 35(2): 267–82. https://doi.org/10.1080/0376835X.2018.1452716

Jann, B. (2008). 'The Blinder–Oaxaca Decomposition for Linear Regression Models'. *The Stata Journal*, 8(4): 453–79. https://doi.org/10.1177/1536867X0800800401

Mattingly, M.J., and S.M. Bianchi (2003). 'Gender Differences in the Quantity and Quality of Free Time: The US Experience'. *Social Forces*, 81(3): 999–1030. https://doi.org/10.1353/sof.2003.0036

Mincer, J. (1962). 'Labor Force Participation of Married Women: A Study of Labor Supply'. In H.G. Lewis (ed.), *Aspects of Labor Economics*. Princeton, NJ: Princeton University Press.

Mugisha, J., C. Sebatta, K. Mausch, E. Ahikiriza, D.K. Okello, and E.M. Njuguna (2019). 'Bridging the Gap: Decomposing Sources of Gender Yield Gaps in Uganda Groundnut Production'. *Gender, Technology and Development*, 23(1): 19–35. https://doi.org/10.1080/09718524.2019.1621597

Neilson, J., and M. Stanfors (2018). 'Time Alone or Together? Trends and Trade-Offs among Dual-Earner Couples, Sweden 1990–2010'. *Journal of Marriage and Family*, 80: 80–98. https://doi.org/10.1111/jomf.12414

O'Donnell, O., E. Van Doorslaer, A. Wagstaff, and M. Lindelow (2008). *Analyzing Health Equity Using Household Survey Data: A Guide to Techniques and Their Implementation*. Washington DC: World Bank. https://doi.org/10.1596/978-0-8213-6933-3

Papke, L.E., and J.M. Wooldridge (1996). 'Econometric Methods for Fractional Response Variables with an Application to 401(k) Plan Participation Rates'. *Journal of Applied Econometrics*, 11(6): 619–32. https://doi.org/10.1002/(SICI)1099-1255(199611)11:6<619::AID-JAE418>3.0.CO;2-1

Passias, E.J., L. Sayer, and J.R. Pepin (2017). 'Who Experiences Leisure Deficits? Mothers' Marital Status and Leisure Time'. *Journal of Marriage and Family*, 79: 1001–22. https://doi.org/10.1111/jomf.12365

Pepin, J.R., L.C. Sayer, and L.M. Casper (2018). 'Marital Status and Mothers' Time Use: Childcare, Housework, Leisure, and Sleep'. *Demography*, 55: 107–33. https://doi.org/10.1007/s13524-018-0647-x

Raley, S., and S. Bianchi (2006). 'Sons, Daughters, and Family Processes: Does Gender of Children Matter?'. *Annual Review of Sociology*, 32(1): 401–21. https://doi.org/10.1146/annurev.soc.32.061604.123106

Sooryamoorthy, R., and M. Makhoba (2016). 'The Family in Modern South Africa: Insights from Recent Research'. *Journal of Comparative Family Studies*, 47(3): 309–21. https://doi.org/10.3138/jcfs.47.3.309

Spitzer, S., and B. Hammer (2016). 'The Division of Labour within Households: Fractional Logit Estimates Based on the Austrian Time Use Survey'. MPRA Paper 81791. Vienna: Vienna Institute of Demography.

StataCorp (2019). *Stata 16 Base Reference Manual.* College Station, TX: Stata Press.

Statistics South Africa (2010). Time Use Survey 2010 [dataset]. Version 1.2. Pretoria: Statistics South Africa [producer], 2014. Cape Town: DataFirst [distributor], 2014. https://doi.org/10.25828/sed9-z823

Statistics South Africa (2013). *A Survey of Time Use 2010.* Pretoria: Statistics South Africa.

Stewart, J. (2013). 'Tobit or Not Tobit?'. *Journal of Economic and Social Measurement*, 38: 263–90. https://doi.org/10.3233/JEM-130376

Voorpostel, M., T. van der Lippe, and J. Gershuny (2010). 'Spending Time Together: Changes Over Four Decades in Leisure Time Spent with a Spouse'. *Journal of Leisure Research*, 42(2): 243–65. https://doi.org/10.1080/00222216.2010.11950204

Wittenberg, M. (2009). 'The Intra-Household Allocation of Work and Leisure in South Africa'. *Social Indicators Research*, 93(1): 159–64. https://doi.org/10.1007/s11205-008-9386-5

Woodcock, S.D. (2008). 'Wage Differentials in the Presence of Unobserved Worker, Firm, and Match Heterogeneity'. *Labour Economics*, 15(4): 771–93. https://doi.org/10.1016/j.labeco.2007.06.003

Ye, X., and R.M. Pendyala (2005). 'A Model of Daily Time Use Allocation Using Fractional Logit Methodology'. In H.S. Mahmassani (ed.), *Transportation and Traffic Theory: Flow, Dynamics and Human Interaction.* Oxford: Elsevier. https://doi.org/10.1016/B978-008044680-6/50028-3

Appendix A: Categorization used in this study

Table A1: Broad categories of production disaggregated into the ten activity groups

SNA production	1. Work in establishments
	2. Primary production not for establishments
	3. Work in non-establishments
Non-SNA production	4. Household maintenance
	5. Care of persons in the household
	6. Community service to non-household members
Non-productive	7. Learning
	8. Social and cultural activities
	9. Mass media
	10. Personal care

Source: authors' compilation based on information from Statistics South Africa (2013).

Table A2: Disaggregate leisure activities, by leisure category

Leisure category	Code[a]	Variable name	Description
Social	810	Cultural	Participating in cultural activities, weddings, funerals, births, and other celebrations
	820	Religious	Participating in religious activities: religious services, practices, rehearsals, etc.
	831	Social (family)	Socializing with family
	832	Social (non-family)	Socializing with non-family
	833	Social (both)	Socializing with both family and non-family
Active	060	Individual religious	Individual religious practices and meditation
	840	Hobbies	Arts, making music, hobbies, and related courses
	850	Sports	Indoor and outdoor sports participation and related courses
	860	Games	Games and other pastime activities
	870	Spectator	Spectator to sports, exhibitions/museums, cinema/theatre/concerts and other performances and events
	880	Social travel	Travel related to social, cultural, and recreational activities
	888	Social waiting	Travel related to social, cultural, and recreational activities
	890	Social other	Social, cultural, and recreational activities not elsewhere classified
Sedentary	910	Reading	Reading
	920	Television	Watching television and video
	930	Music	Listening to music/radio
	940	Computer	Accessing information by computer
	950	Library	Visiting library
	980	Mass media travel	Travel related to mass media use and entertainment
	990	Mass media other	Mass media use and entertainment not elsewhere classified
	050	Doing nothing	Doing nothing, rest and relaxation
Personal care	010	Sleep	Sleep and related activities
	020	Eating and drinking	Eating and drinking

Note: [a] based on the 107 distinct activities into which Statistics South Africa post-coded responses received.

Source: authors' compilation based on information from Statistics South Africa (2013).

Appendix B: Descriptive statistics

Table B1: Mean number of children in the household, by gender of respondent

Variables	All children		Male children		Female children	
	(1)	(2)	(1)	(2)	(1)	(2)
	Male	Female	Male	Female	Male	Female
Younger than 3 years	0.21	0.33 ***	0.10	0.16 ***	0.11	0.17 ***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
3–6 years	0.31	0.44 ***	0.17	0.22 ***	0.15	0.22 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
7–9 years	0.20	0.29 ***	0.10	0.14 ***	0.10	0.14 ***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
10–13 years	0.28	0.37 ***	0.14	0.18 ***	0.14	0.19 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
14–18 years	0.39	0.46 ***	0.21	0.23 *	0.18	0.23 ***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Sample	13,731	17,030	13,731	17,030	13,731	17,030
Population	14,697,025	16,100,434	14,697,025	16,100,434	14,697,025	16,100,434

Note: individuals that are 18 years old or younger are classified as children. The age range categories are inclusive of the lower and upper bound ages. Only not-employed children are considered here. The data are weighted. Standard errors are in parentheses. Asterisks indicate that the value for females is significantly different from the value for males, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

Table B2: Mean number of employed and not-employed in the household, by gender of respondent

Variables	All household members[a]		Male household members[b]		Female household members[c]	
	(1)	(2)	(1)	(2)	(1)	(2)
	Male	Female	Male	Female	Male	Female
No. employed	0.27	0.30 ***	0.12	0.22 ***[d]	0.16	0.08 ***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
No. employed part-time	0.04	0.03	0.01	0.02 **	0.02	0.01 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
No. employed full-time	0.24	0.27 ***	0.10	0.20 ***	0.13	0.07 ***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
No. not-employed working-age adults	1.09	1.88 ***	0.57	0.72 ***	0.52	1.17 ***
	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)
No. pension-age	0.24	0.22	0.07	0.11 ***	0.17	0.11 ***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Sample	13,731	17,030	13,731	17,030	13,731	17,030
Population	14,697,025	16,100,434	14,697,025	16,100,434	14,697,025	16,100,434

Note: individuals that are 18 years old or younger and 60 years old or older are classified as children and pension-age, respectively. Children and pension-age individuals who are employed are also counted in the 'No. employed', 'No. employed part-time', and 'No. employed full-time' categories. Part-time employed individuals work fewer than 35 hours/week and full-time employed individual work 35 hours/week or more. The 'No. not-employed working-age adults' category includes the not-employed between 18 and 60 years old. Only not-employed of pension-age are counted in the 'No. pension-age' category. The data are weighted. Standard errors are in parentheses. Asterisks indicate that the value for females is significantly different from the value for males, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. [a] This includes all household members of a particular category. [b] This counts only male household members of a particular category. [c] This counts only female household members of a particular category. [d] For example, on average there are 0.22 employed males in households where females typically reside.

Source: authors' calculation based on TUS (2010) data.

Table B3: Mean for leisure activities, by gender of respondent

Variables	Participation rate		Mean minutes per day	
	(1)	(2)	(3)	(4)
	Male	Female	Male	Female
Social leisure				
Cultural	0.03	0.03 *	3.72	4.43
	(0.00)	(0.00)	(0.43)	(0.30)
Religious	0.09	0.13 ***	11.62	15.75 ***
	(0.00)	(0.00)	(0.64)	(0.55)
Socializing (family)	0.36	0.42 ***	37.51	47.02 ***
	(0.01)	(0.01)	(0.87)	(0.91)
Socializing (non-family)	0.39	0.26 ***	51.48	25.18 ***
	(0.01)	(0.00)	(1.17)	(0.74)
Socializing (both)	0.03	0.02 *	2.98	2.44
	(0.00)	(0.00)	(0.25)	(0.22)
Active leisure				
Individual religious	0.04	0.07 ***	1.47	2.55 ***
	(0.00)	(0.00)	(0.11)	(0.14)
Hobbies	0.01	0.01	0.70	0.55
	(0.00)	(0.00)	(0.14)	(0.10)
Sports	0.06	0.02 ***	6.66	1.72 ***
	(0.00)	(0.00)	(0.39)	(0.13)
Games	0.05	0.03 ***	5.21	2.29 ***
	(0.00)	(0.00)	(0.43)	(0.25)
Spectator	0.01	0.01 ***	1.72	0.62 ***
	(0.00)	(0.00)	(0.21)	(0.12)
Social travel	0.31	0.22 ***	22.05	15.04 ***
	(0.01)	(0.00)	(0.59)	(0.40)
Social waiting	0.00	0.01 ***	0.14	0.23
	(0.00)	(0.00)	(0.05)	(0.04)
Social other	0.01	0.01	0.76	0.51
	(0.00)	(0.00)	(0.21)	(0.11)
Sedentary leisure				
Reading	0.09	0.07 ***	6.44	5.17 **
	(0.00)	(0.00)	(0.31)	(0.26)
Television	0.71	0.71	118.88	110.86 ***
	(0.01)	(0.00)	(1.44)	(1.27)
Music	0.20	0.15 ***	17.20	11.36 ***
	(0.00)	(0.00)	(0.55)	(0.36)
Computer	0.02	0.01 **	1.73	0.77 ***
	(0.00)	(0.00)	(0.27)	(0.11)
Library	0.00	0.00	0.16	0.11
	(0.00)	(0.00)	(0.03)	(0.02)
Mass media travel	0.01	0.00	0.33	0.16
	(0.00)	(0.00)	(0.10)	(0.03)
Mass media other	0.01	0.00	0.40	0.14
	(0.00)	(0.00)	(0.14)	(0.03)
Doing nothing	0.51	0.53 **	51.09	56.23 ***
	(0.01)	(0.01)	(0.97)	(0.88)
Personal care leisure				
Sleep	1.00	1.00	551.26	561.15 ***
	(0.00)	(0.00)	(1.69)	(1.32)
Eating and drinking	0.99	0.99	77.55	70.13 ***
	(0.00)	(0.00)	(0.62)	(0.46)
Sample	13,645	16,969	13,645	16,969
Population	14,500,498	15,934,865	14,500,498	15,934,865

Note: the data are weighted. Standard errors are in parentheses. Asterisks indicate that the value for females is significantly different from the value for males, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.

Appendix C: Decomposition results

Table C1: Oaxaca–Blinder decomposition for total leisure (excluding sleeping and eating)

Variables	Model 1		Model 2.1(a)		Model 2.2(a)	
	(1) Minutes per day	(2) % of total gap	(3) Minutes per day	(4) % of total gap	(5) Minutes per day	(6) % of total gap
Overall						
Female	300.034***		300.034***		300.034***	
	(1.993)		(1.997)		(2.005)	
Male	337.690***		337.690***		337.690***	
	(2.704)		(2.700)		(2.689)	
Difference	−37.656***	100.000	−37.656***	100.000	−37.656***	100.000
	(3.359)		(3.359)		(3.354)	
Endowments	9.858***	−26.179%	9.297***	−24.689%	13.946***	−37.035%
	(1.286)		(1.292)		(1.750)	
Coefficients	−34.816***	92.458%	−34.633***	91.972%	−25.988***	69.014%
	(4.084)		(4.037)		(4.245)	
Interaction	−12.698***	33.721%	−12.320***	32.717%	−25.614***	68.021%
	(2.237)		(2.218)		(2.965)	
Endowments						
No. children	−3.784***	10.049%	−4.428***	11.759%	−5.750***	15.270%
	(0.655)		(0.685)		(0.757)	
No. employed	−0.164	0.436%	−0.272	0.722%	−1.876*	4.982%
	(0.114)		(0.154)		(0.748)	
No. not employed	13.954***	−37.057%	14.149***	−37.574%	21.198***	−56.294%
	(1.429)		(1.436)		(1.652)	
No. pensioners	−0.148	0.393%	−0.152	0.404%	0.373	−0.991%
	(0.106)		(0.108)		(0.476)	
Coefficients						
No. children	−22.862***	60.713%	−22.582***	59.969%	−33.440***	88.804%
	(4.119)		(4.105)		(4.221)	
No. employed	−4.519	12.001%	−3.985	10.583%	−5.665*	15.044%
	(2.311)		(2.366)		(2.507)	
No. not employed	43.239***	−114.826%	43.226***	−114.792%	55.742***	−148.030%
	(5.378)		(5.361)		(5.504)	
No. pensioners	−10.547***	28.009%	−10.443***	27.733%	−8.548***	22.700%
	(1.677)		(1.674)		(1.765)	
Constant	−40.127***	106.562%	−40.849***	108.479%	−34.077***	90.496%
	(5.572)		(5.600)		(5.664)	
Interaction						
No. children	5.956***	−15.817%	6.213***	−16.499%	9.554***	−25.372%
	(1.139)		(1.200)		(1.323)	
No. employed	0.330	−0.876%	0.438	−1.163%	3.951**	−10.492%
	(0.203)		(0.258)		(1.235)	
No. not employed	−18.236***	48.428%	−18.231***	48.415%	−36.423***	96.726%
	(2.351)		(2.344)		(2.841)	
No. pensioners	−0.748	1.986%	−0.740	1.965%	−2.696**	7.160%
	(0.423)		(0.419)		(0.871)	
Sample	30,761		30,761		30,761	
Population	30,797,459		30,797,459		30,797,459	

Note: the Oaxaca–Blinder three-fold decomposition is conducted from the viewpoint of females. When the percentage of the total gap is positive for a variable, this indicates that the variable leads to females having less leisure time than males and vice versa. The decompositions use the same variables as the previous models, but the variables are grouped into categories, with the total category effect being reported in this table. The data are weighted. Standard errors are in parentheses. Asterisks indicate significant values, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table C2: Oaxaca–Blinder decomposition for total leisure (excluding sleeping and eating): Model 2.2(b)

Variables	(1) Minutes per day	(2) % of total gap
Overall		
Female	301.757***	
	(1.962)	
Male	341.590***	
	(2.685)	
Difference	−39.834***	100.000
	(3.325)	
Endowments	27.571***	−69.215%
	(2.090)	
Coefficients	−81.097***	203.587%
	(4.318)	
Interaction	13.693***	−34.375%
	(3.450)	
Endowments		
No. children	−3.518***	8.832%
	(0.658)	
No. employed	−1.057	2.654%
	(0.686)	
No. not employed	11.809***	−29.646%
	(1.689)	
No. pension-age	−0.755	1.895%
	(0.461)	
Age	2.948***	−7.401%
	(0.545)	
Marital status	0.464	−1.165%
	(0.677)	
Race	0.034	−0.085%
	(0.116)	
Location	−0.466*	1.170%
	(0.228)	
Employment status	18.719***	−46.993%
	(1.253)	
Unemployed	0.512	−1.285%
	(0.625)	
Inactive	18.207***	−45.707%
	(1.216)	
Education status	−0.336	0.844%
	(0.225)	
Income	−0.060	0.151%
	(0.440)	
Domestic worker	−0.284	0.713%
	(0.184)	
Weekend	0.072	−0.181%
	(0.585)	
Coefficients		
No. children	−2.304	5.784%
	(4.203)	
No. employed	−2.568	6.447%
	(2.292)	
No. not employed	4.365	−10.958%
	(5.641)	
No. pension-age	−5.957***	14.955%
	(1.616)	
Age	2.918	−7.325%
	(23.824)	
Marital status	−6.531	16.396%
	(5.188)	
Race	3.255	−8.171%

Variables	(1) Minutes per day	(2) % of total gap
	(2.253)	
Location	4.671	−11.726%
	(3.689)	
Employment status	−62.297***	156.391%
	(4.903)	
Unemployed	−9.287***	23.314%
	(1.095)	
Inactive	−53.010***	133.077%
	(4.359)	
Education status	−21.783	54.684%
	(11.872)	
Income	−6.118	15.359%
	(6.673)	
Domestic worker	0.523	−1.313%
	(1.008)	
Weekend	−6.066***	15.228%
	(1.837)	
Constant	16.798	−42.170%
	(27.644)	
Interaction		
No. children	1.156	−2.902%
	(1.186)	
No. employed	−0.002	0.005%
	(1.065)	
No. not employed	−3.079	7.730%
	(2.802)	
No. pension-age	−0.264	0.663%
	(0.741)	
Age	−2.517***	6.319%
	(0.622)	
Marital status	1.307	−3.281%
	(1.459)	
Race	0.057	−0.143%
	(0.186)	
Location	0.138	−0.346%
	(0.127)	
Employment status	17.420***	−43.731%
	(1.627)	
Unemployed	0.431	−1.081%
	(0.527)	
Inactive	16.989***	−42.649%
	(1.602)	
Education status	−0.187	0.469%
	(0.425)	
Income	−0.429	1.077%
	(0.689)	
Domestic worker	0.070	−0.176%
	(0.140)	
Weekend	0.023	−0.058%
	(0.184)	
Sample	30,761	
Population	30,797,459	

Note: the Oaxaca–Blinder three-fold decomposition is conducted from the viewpoint of females. When the percentage of the total gap is positive for a variable, this indicates that the variable leads to females having less leisure time than males and vice versa. The decompositions use the same variables as the previous models, but the variables are grouped into categories with the total category effect being reported in this table. For employment status, the total category effect and the individual employment status categories are included, with the employed category being the omitted dummy variable. The data are weighted. Standard errors are in parentheses. Asterisks indicate significant values, where *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Source: authors' calculations based on TUS (2010) data.