Examining the Impact of Employment Status on Time Spent on Chores and Childcare Among U.S. Guardians

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Background & Research Question

Balancing employment responsibilities with household activities and childcare is a challenge many guardians face, particularly in families with children under 15 years old. Changing workforce dynamics, gender roles, and family structures significantly influence how time is allocated between paid work, domestic responsibilities, and parenting[2].

This study utilizes a multiple linear regression model to answer the following research question:

How does allocating time to household activities and childcare in the United States differ between employed and unemployed guardians (ages 27 to 60) of children under 15 years in 2023?

Data Visualization

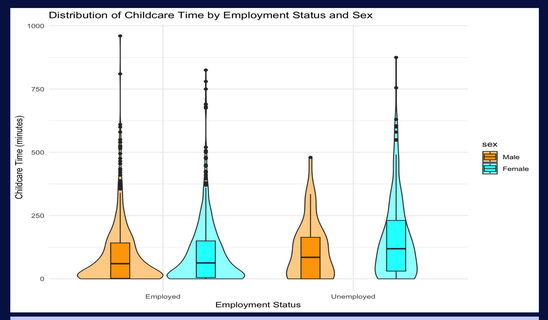

Figure 1: **Distribution of total time spent on childcare by employment status and sex.** Employed women allocate the least time to childcare, while unemployed women allocate the most.

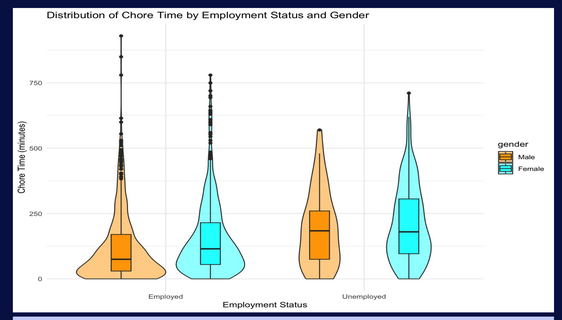

Figure 2:* **Distribution of total time spent on household activities by employment status and sex.** Unemployed guardians, particularly women, spend more time on household activities.

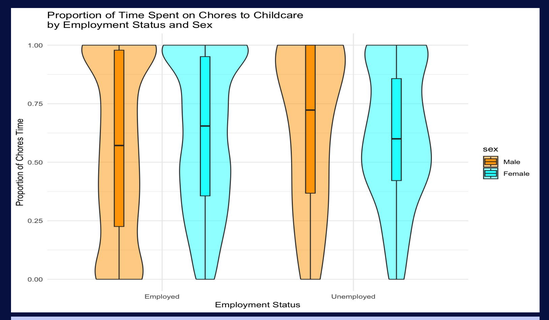

Figure 3: **The proportions of time allocated to chores by employment and sex.** Unemployed men allocated more time to chores as opposed to childcare, compared to all other groups.

Methodology

Data

The study uses 2023 data from the American Time Use Survey (ATUS), a nationally representative diary-based dataset that provides detailed insights into how individuals allocate time to various activities over a 24-hour period. The ATUS combines demographic, labor force, and household information to allow for nuanced time-use analysis. The final dataset merges the following files using unique respondent identifiers:

- Respondent; includes demographic data, earnings, and employment status.
- Activity; includes information such as activity codes, activity start and stop times, and locations.
- Roster; includes information about household members and non-household children under 18.

Cleaning

As there were no missing values, The dataset was filtered to include households with at least one guardian aged 27–60 years and children under 15 years. Only time spent on childcare (codes 301, 302, 303, 401, 402, 403) and household activities (TUTIER1CODE = 2) was retained for analysis. The final dataset contains 1566 observations and 7 variables, including employment status, sex, age, and number of children.

The age range of 27–60 was chosen to capture working-age individuals, and because the age 27 is the average first childbearing age in the United States.

Analysis Approach

Linear regression models were used to evaluate the relationship between time allocation and predictors: employment status, sex, age, and number of children. Interaction terms (e.g., employment status * sex) were included to explore variations across subgroups. Model performance was assessed using adjusted R^2, p-values, and BIC (Table 1). Assumptions of normality, homoscedasticity, and linearity were tested and validated using residual plots.

Data Modeling

	SLR	MLR 1	MLR 2	MLR Interaction 1	MLR Interaction 2
Employment status	0.4381	0.4245	0.4235	0.4233	0.4235
Age		< 0.0001*	< 0.0001*	< 0.0001*	< 0.0001*
Sex		0.0005*	< 0.0005*	0.007*	0.0072*
Number of children			0.0167*	0.0166*	0.0073*
Employment status * Sex				0.1997	
Employment status * Number of children					0.3309
R^2	0.0008	0.0532	0.0575	**0.0581**	0.0577
Adjusted R^2	0.00016	0.0514	0.0551	**0.0557**	0.0553
BIC	743.26	**690.42**	691.66	697.005	697.71

Table 1: Comparison of linear models ran. Significant predictors ($p < 0.05$) are marked with an asterisk (*), indicating their strong association with time allocation. Variables such as age, sex, and number of children are consistently significant across models.

	SLR	MLR 1	MLR 2	MLR Interaction 1	MLR Interaction 2
RMSE (Train)	0.3364	0.3263	0.3254	***0.3252***	0.3253
RMSE (Test)	0.3367	0.3304	***0.3299***	0.3301	0.3301

Seeing as employment status was insignificant across all models, MLR Interaction 1 was chosen because it achieves the highest Adjusted R^2 (0.0557) and R^2 (0.0581), showing it explains the most variability in time allocation while accounting for model complexity.

The equation of the final model is:

Time Allocation Proportion = 0.1863 + 0.0874.Unemployed + 0.0798.Female +0.0104.Age - 0.0250.Children - 0.0979.Unemployed*Female

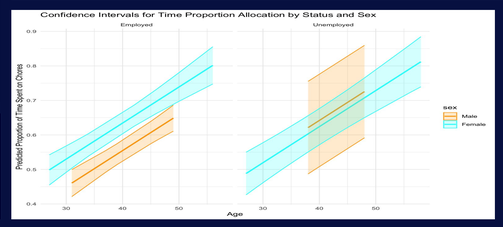

Figure 4: **The confidence intervals** are narrower for employed individuals, suggesting more precise predictions due to less variability. Whereas for unemployed individuals, the intervals are wider, especially for males, which may indicate greater heterogeneity in time allocation behavior in this group.

Table 2: The RMSE for the selected model on the test data (0.3301) shows good predictive accuracy and low overfitting, as it remains close to the training RMSE.

Results

- Employment reduces the time guardians spend on chores and childcare. Unemployed individuals allocate more time to these activities. However, the reduction is more pronounced among men
- The gap between unemployed and employed men is wider than among women.
- Guardians with more children spend more time on childcare, but the increase is not as large as expected, potentially due to task-sharing or older children's self-sufficiency.
- These findings highlight the ongoing influence of employment and gender norms on household time allocation. Employed individuals face competing priorities, leading to reduced time spent on chores and childcare. Meanwhile, unemployed women bear a disproportionate share of household work, indicating persistent gender inequalities. The interaction of employment and gender also reveals that men’s household contributions are sensitive to employment status.
- The findings also highlight the need for workplace policies that promote work-life balance, such as flexible hours and affordable childcare.

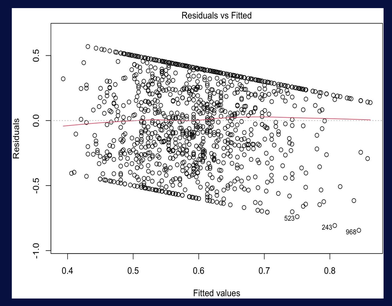

Figure 5: **Evaluation of the linear regression assumptions for the first interaction model.** The residual versus fitted value plot shows violations to the normality and equal variance assumptions, but maintains linearity evidence by the spline.

References

1) Data source: https://www.bls.gov/tus/data/datafiles-2023.htm
2) Bianchi, S. M. (2011). Family Change and Time Allocation in American Families. The ANNALS of the American Academy of Political and Social Science. https://doi.org/10.1177/0002716211413731