

Time Allocation and Inequality: A Study of Shifting Social Leisure Time Disparities

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Abstract

This study utilized the American Time Use Survey (ATUS) data from 2003 to 2023 to document trends in social leisure time allocation. In the two decades, the average weekly leisure time of U.S citizens increased by approximately 2 hours and 30 minutes. Previous studies have shown significant disparities in social leisure time based on factors such as gender, marital status, employment status, education level, and parental status. Comparing 2003 to 2023, these differences have largely persisted, with no significant changes observed in gender, marital status, employment status, or education level. However, a notable increase in the gap between parents and non-parents in terms of leisure time has been observed, with parents experiencing a substantial reduction in social leisure time. Regression models indicate that age and parental status have the strongest explanatory power in determining social leisure time. Time series predictions suggest that social leisure time will continue to increase in the future.

Introduction

Time is the only truly equal currency among humans—regardless of wealth, gender, or generational differences, every individual is granted the same initial endowment of 24 hours per day. However, the way individuals allocate these 24 hours among work, family, and personal pursuits varies significantly. This distribution is not solely determined by personal preference; rather, it is shaped by objective constraints and broader social environments. According to the theory of social structure (Szalai, 1972), individual time allocation is fundamentally the result of institutional scheduling (e.g., the nine-to-five work system), economic constraints (e.g., inflexible working hours), and cultural norms (e.g., gender role expectations). As Szalai revealed, the temporal order of industrial society serves as an implicit carrier of power relations—from the disciplinary work hours of assembly line production to the gendered division of labor in the household, from the life-cycle rhythms shaped by educational systems to the legally defined boundaries of leisure under welfare policies. Ultimately, an individual's time allocation is the equilibrium outcome of multiple competing social structures. Therefore, analyzing changes in time-use patterns provides a crucial lens for observing shifts in societal priorities, economic transformations, and evolving collective values.

This study examines the distributional dynamics, long-term evolution, and group heterogeneity of social leisure time among individuals aged 16 and older in the United States from 2003 to 2023. Using micro-level longitudinal data from the American Time Use Survey (ATUS), this research is structured along three progressive dimensions: First, a structural analysis of time distribution, identifying trends in time allocation across different demographic subgroups (e.g., gender, age, and education level) over the years. Second, a causal investigation of group disparities, employing multilevel regression models to quantify the impact of structural factors such as parental responsibilities, marital status, and employment conditions. Third, an analysis of intertemporal trends, utilizing time series methods to reveal the evolution of social leisure time and forecast its future distribution.

Data

The ATUS, conducted by the U.S. Bureau of Labor Statistics (BLS), is the nation’s primary source of information on how individuals allocate their time. Launched in 2003, the ATUS collects detailed, 24-hour time diaries from a nationally representative sample of the civilian, noninstitutionalized population aged 15 and older. These time diaries capture how respondents spend their time across various activities, including work, leisure, caregiving, and personal care, providing valuable insights into patterns of daily life.

The ATUS is conducted through structured telephone interviews, in which respondents recall their activities from the previous 24 hours. A random individual from each sampled household is selected to participate, using a stratified sampling design to ensure national representativeness. To capture variability in time-use patterns, interviews are distributed across all days of the week and throughout the year.

In addition to the time-use information, the survey collects demographic, socio-economic, and employment details, most of which are pre-collected through the Current Population Survey (CPS), the parent survey of the ATUS. This connection allows researchers to enhance the ATUS data with variables such as income, education, and family structure.

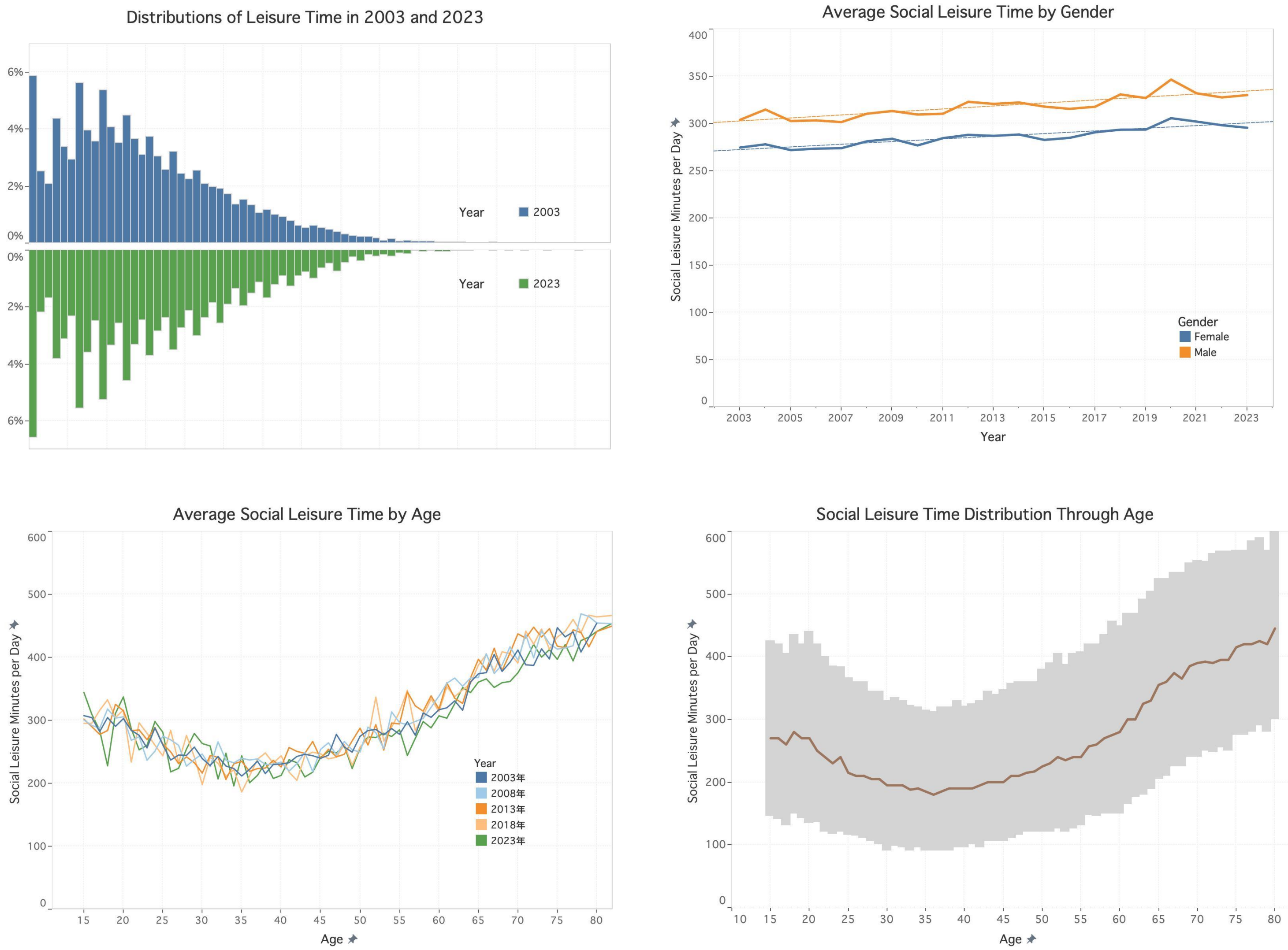
Methods

To estimate the relationship between the dependent variable and the independent variables, this study employed the Ordinary Least Squares (OLS) regression technique. OLS is a widely used method in econometrics and statistical analysis for estimating the parameters of a linear regression model, given its optimal properties under standard assumptions.

The ARIMA (Autoregressive Integrated Moving Average) model is a classical time series analysis method particularly suited for modeling and forecasting non-stationary time series. The goal of the ARIMA model is to capture trends, seasonality, and random fluctuations in time series by combining autoregressive (AR), differencing (I), and moving average (MA) components. Its mathematical expression is ARIMA(p, d, q), where p, d, and q represent the orders of autoregression, differencing, and moving average, respectively.

Results

Social Leisure time has shown a steady increase over the period. In 2003, the average daily leisure time was 287.33 minutes (approximately 4 hours and 47 minutes). By 2023, it had risen to 311.60 minutes (approximately 5 hours and 12 minutes), an increase of 24.27 minutes over 20 years. The largest annual increase occurred between 2019 and 2020, when social leisure time increased by 15.67 minutes. Post-2020, social leisure time decreased slightly but remained above pre-pandemic levels, stabilizing around 311 minutes in 2022 and 2023. The distribution of social leisure time is right-skewed.



OLS

VARIABLES	Average Leisure Time
Age	0.699*** (0.129)
Male	49.946*** (0.792)
Employed	-110.389*** (0.946)
Married	-27.976*** (0.880)
Has child under 18	-41.912*** (1.004)
Some college degree	-24.482*** (0.878)
Master's degree or higher	-50.607*** (1.167)
Constant	321.008*** (2.973)
Observations	245,139
R-squared	0.194
Observations	245139
Adj. R-squared	0.194

ARIMA

Based on the analysis of the autocorrelation function (ACF) and partial autocorrelation function (PACF), an ARIMA(0,1,1) model was selected as the candidate model. The final log-likelihood value of the model was -61.46, with a Wald chi-square statistic of 7.27 and a corresponding p-value of 0.007, suggesting that the model is statistically significant overall. The constant term was estimated at 1.54, with a standard error of 0.22, a z-value of 7.15, and a p-value of less than 0.001, indicating that the constant term is statistically significant. The moving average term (ma L1.) was estimated at -0.99, with a standard error of 0.37, a z-value of -2.70, and a p-value of 0.007, indicating that the moving average term is statistically significant. The standard deviation of the model residuals was estimated at 4.84.

Based on the fitted ARIMA(0,1,1) model, this study forecasted the average daily leisure time of Americans for the year 2024. The forecasted value for 2024 is 317.21 minutes per day.